

Rock Products

DEVOTED TO THE PRODUCTION
AND SALE OF ROCK AND CLAY PRODUCTS.

Vol. 1.

LOUISVILLE, KY., NOVEMBER, 1902.

No. 8.

THE OHIO SANDSTONE INDUSTRY.

Of the States in the Union reporting a value of mineral production of \$1,086,529,521.00 in 1901, Ohio stands with the first rank, in the value of the output of petroleum, coal, natural gas, stone and other minerals.

The petroleum, coal and natural gas contribute more or less to the actual needs of the people, while the output of such material as stone shows the financial and progressive prosperity of the country. In 1900 the value of the stone production in Ohio was \$4,202,983.00, in 1901 it was \$5,183,225.00, putting Ohio third place in the rank of forty States reporting to the United States Government, in value of \$48,686,655.00 for the stone produced in 1900, and \$60,982,060.00 in 1901. The various kinds of stone contributing to the total include limestone, marble, slate, granite, trap rock, sandstone and bluestone. Ohio's contribution consists of limestone and sandstone of almost equal value of production, the value of the sandstone being \$2,576,723.00, and of limestone \$2,606,502.00 in 1901, but while ranking third in the production of limestone, it is first in rank in the production of sandstone. It also produces more for flagstone, and abrasive materials such as grindstones, whetstone, oilstone, etc., than any other sandstone producing States, while in sandstone for building purposes and for curbing it ranks second.

One of the sections of Ohio most noted for its sandstone is in the Northern part, near the city of Cleveland, and to the South and West, in Cuyahoga, Lorain, Huron and Summit counties. From these counties, besides an enormous amount of building stone, is obtained the famous "grits" used all over the world for grindstones, whetstones, millstones, oilstones, hones, scythe stones and ax stones, etc. These were at first given the general name of "Berea grits," from the town of Berea, where it was first quarried most largely, but gradually the names where the grit was quarried has been adopted and we now have Berea grit, Amherst grit, Independence grit, Massillon grit, Tippecanoe grit, Marietta grit, etc. Berea, how-

ever, produces the greatest amount of stone for the manufacture of abrasives, and the largest quarry and plant for the production and manufacture of the grit in that section is located directly in the town. This is the property of the Cleveland Stone Co. Berea is pleasantly situated about fifteen miles from Cleveland and easily accessible from the trolley cars. The rock here is easily and economically quarried, the stripping not being very heavy and good rock soon obtained. Pieces of stone of almost any size may be taken out, and the quality of the stone is so uniform that there

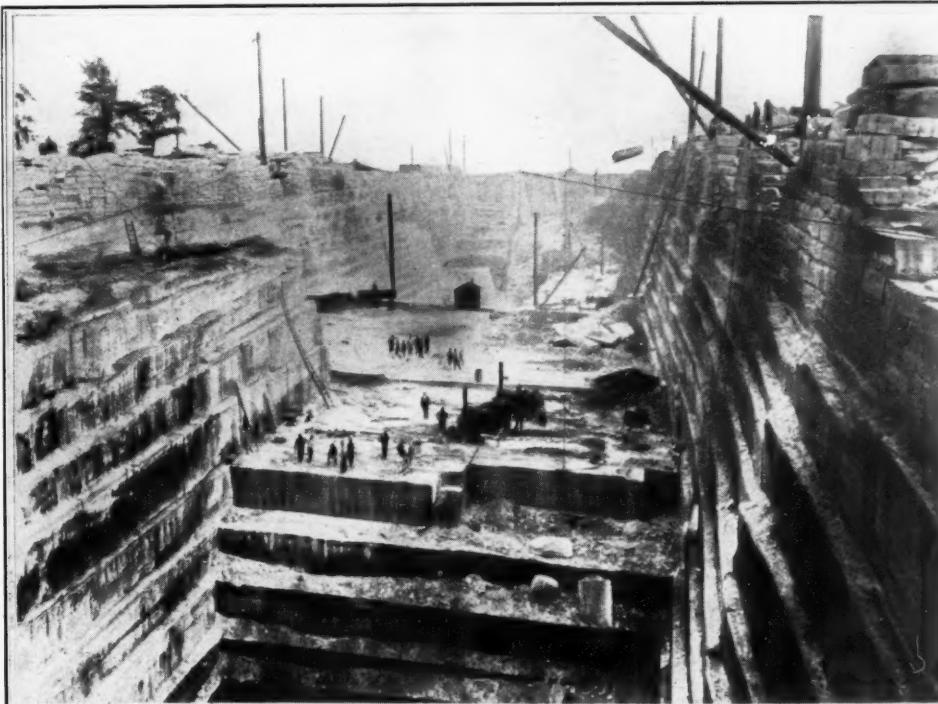
stone does not discolor, or disintegrate when exposed to the weather. It shows great resistance to fire, and these qualities, together with its attractive coloring, makes it one of the most valuable and handsome building stone found in the United States.

Besides the large amount of building stone obtained from the Berea quarries, large amounts of this stone are used yearly for railroad bridges, and over Rock Creek on the L. S. & M. C. R. R. at Berea are arches built in 1849, a most fitting testimonial of the utility of the stone.

The length and width of stone obtainable from the quarries at Berea, as well as the split-rock character of the stone, which renders it capable of being split into pieces of unusual length and of almost any thickness, for curbing, and of being sawed into flagstones of almost any size and thickness, have made the Berea, and indeed all Ohio sandstone of this group, as well known as the building stone. The hardness, weathering properties, rough surface which does not wear smooth and become as slippery as other flagging material aids this popularity as well as the attractive sizes of the stone obtained.

At Berea the Cleveland Stone Co. has its largest sawing mills for sawing flagstones and rough grindstones, etc., one of the mills working eighteen gangs of saws, and also the largest works for making and mounting grindstones, whetstones, scythe stones,

etc., in the country. The stone selected for the grindstone is brought from the quarry, sawed or split to the desired thickness, and then roughly squared off to the size desired. A square hole is then cut in the center of the stone and the stone placed on an iron collar and firmly keyed to a shaft and revolved. Two men, one on each side of the stone, with a long iron bar held against the revolving stone, cut the grindstone to the size desired. If the stone is very large, a circle is drawn on the rough stone and roughly cut by hand to the size desired before being turned. If it is necessary to smooth the sides of the larger wheels it is also done by the men with the bars. The dust



VIEW NEAR WESTERN END OF THE GREAT "CANYON" SANDSTONE QUARRY OF THE CLEVELAND STONE CO.

is comparatively little waste. The average depth of quarrying at Berea is perhaps fifty feet, although the depth of the stone runs to about seventy-five feet. The stone is in horizontal sheets, varying in thickness from a few inches to eight or ten feet. The bedding is quite even, with few joints. The stone in the quarry is quite soft, being saturated with quarry water, and channelers cut it very easily. It hardens on exposure to air, and when dry a cubic foot weighs about 140 pounds. In color the stone is a light bluish gray, and is almost pure silica, analyzing 96.90 per cent silica, and 1.68 per cent iron carbonate, with small amounts of oxide of calcium and other alkalis. It splits easily, smoothly and uniformly thick. The

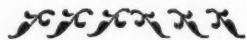
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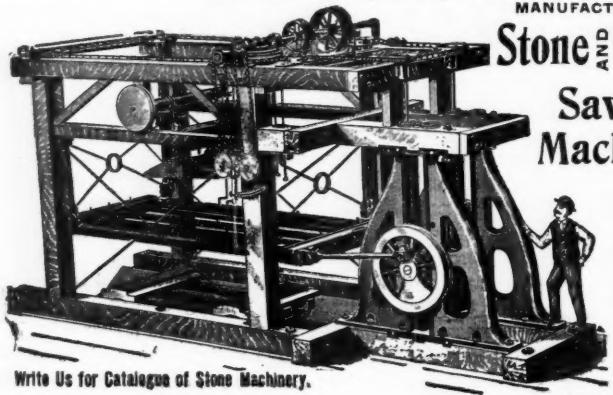
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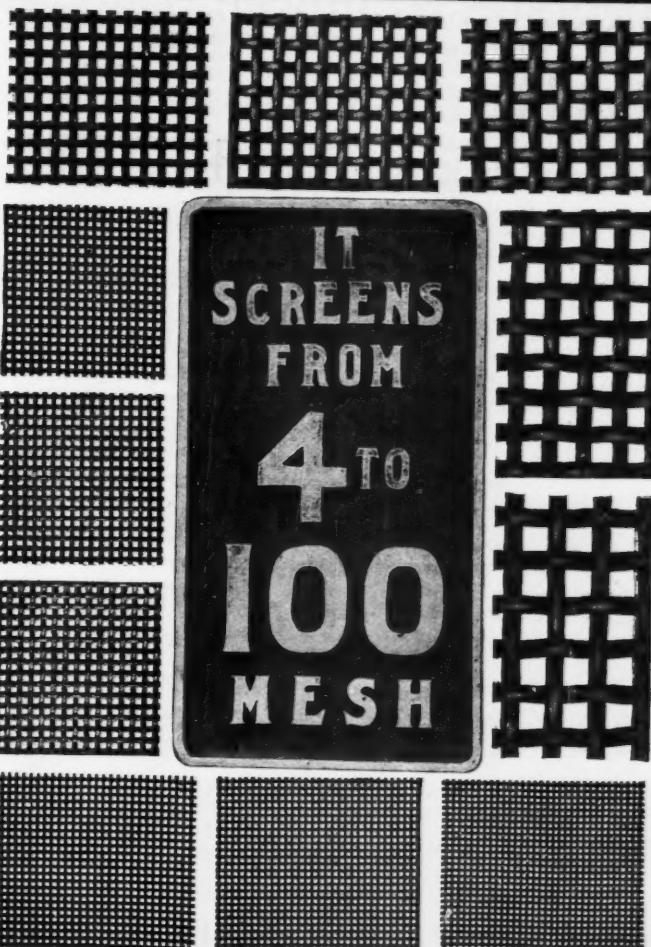
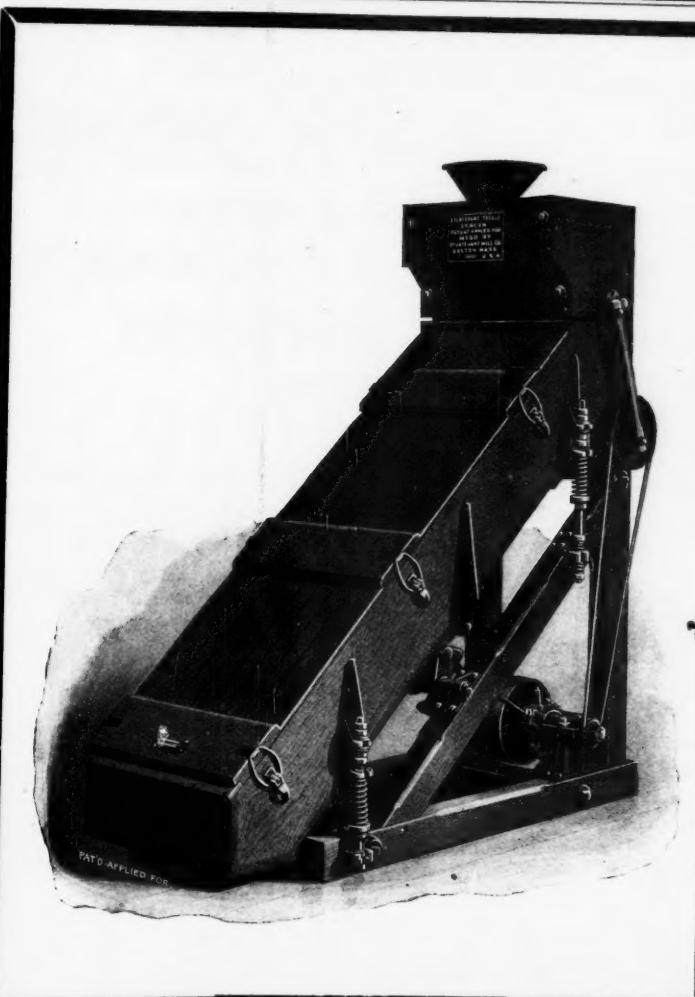
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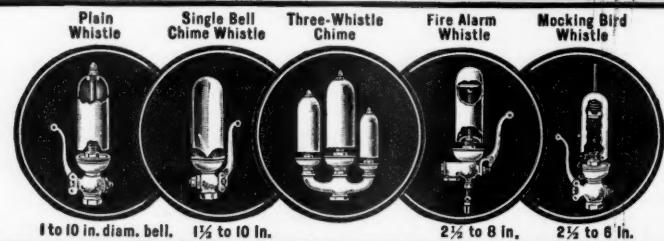
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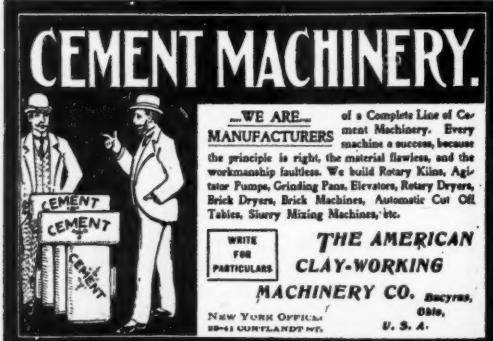
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The mission of ROCK PRODUCTS is to serve the trade in any and every honorable way possible, to promote better profits and make life more pleasant for those engaged in the business to which it caters. With this end in view, criticism is courted, and all are invited to use its columns to further ideas and suggestions for the good of the trade. The office, too, is at the service of the constituents of this paper; so when you want to buy or sell, or merely ask a question, write, and when you are in town, call and make it your headquarters.

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LOUISVILLE, KY., NOVEMBER, 1902.

OUR SLATE.

COUNSEL WANTED.

In union there is strength, but union labor is in need of wiser counsel, lest it exerts its strength in ways that are evil instead of good.

Organized Effort.

The organized effort of the granite dealers in Vermont is one worthy of the friendship and co-operation of every man in the trade, because of insuring a reasonable price for granite. In the days gone by all will remember how cheap this excellent rock was sold and how few quarrymen or operators gained from their investment. This was due to the fact that there were few of the quarrymen or manufacturers who got at the root of the evil—the cost of manufacturing, and the handsome buyer who came along was able to get

a price which was nonsensical from any stand-point except the dealers who had an opportunity to enjoy prosperity, but, sad as it may seem, with few exceptions, this advantage gained from cheap purchases was given to the consumer and no one was benefited by the transaction. Nowadays there is an opportunity, with a reasonable price, to get at least cost out of the stone, and there ought to be a good, nice, clean profit after all contingent expenses are included in addition to the cost of stone in the ground, labor in quarrying, labor in manufacturing, interest on investment, wear and tear on tools and plant, a good round salary for the members of the firm, contingent expenses which would cover the cost of diagrams and estimates where the quarrymen or dealer does not get the trade, and the one hundred and one little items which crop out during the year's business. There is nothing like a good, strong organization, with the right people at the head of it, to insure prosperity to an industry. We are glad to say that more interest is manifested in the Barre Exchange to-day than ever in its history.

HELP seems to be scarce in all lines of the rock and clay industries.

IT DOESN'T pay to be an old fogey in the stone business any more than it does in any other kind of business.

THE use of asphalt is increasing rapidly, and it is time for the home product to have the consideration due it.

WE would like to have the attention of lime manufacturers on ways and means for pushing lime as a fertilizer.

THERE seems to be a perfect swarm of ideas and patents hatching out around the brick and artificial stone industries.

AS USUAL, retail dealers in building material will find some good logic by reading the department set apart for them.

IT is not so much a question of finding salt in the salt business as it is a question of getting it manufactured and sold at a profit.

IF LABOR continues scarce in the South there is more than a possibility of a shortage in the phosphate supply before a year rolls around.

THERE is quite a growing demand for Portland cement in South Africa at present, not only for use as mortar but for manufacturing artificial stone.

REPORTS from abroad indicate quite an improvement in the phosphate market and there has been some scarcity abroad of phosphate for immediate delivery.

IT is much easier to figure out profits in a prospectus of a cement industry than it is to make both ends meet when a cement plant is actually built and put in operation.

REPORTS from Buffalo, N. Y., state that the prices on brick have been raised about \$1.00 on the thousand, the rates now being \$7.75 to \$9.00 per thousand.

THE weather conditions in Northern Ohio this season has been such as to prevent, in a measure, the building of pike roads, the result of which has materially affected the crushed stone trade.

THE brick men, through their national organization, are taking steps to be properly represented at the St. Louis World's Fair, and it is time for those in the rock product line to begin talking exhibit.

WHILE the markets are quiet in the phosphate producing fields in both Tennessee and Florida there is a stimulating air of expectation and activity that indicates good business ahead, provided the lack of help and cars does not block the game.

SPEAKING of costs, who can tell us what is a safe figure for the wear and tear account per 1,000 barrels in a Portland cement plant? We understand the wear and tear is greater in this work than in almost any other line employing machinery, but do not recall having seen exact figures on the subject?

THE cement manufacturers of Michigan have evidently been getting more glory in return for their efforts than money, judging from the report that the first dividend paid by any mill in that State has but recently been declared. Michigan is not the only State, however, in which cement dividends are fewer than cement industries.

IT is said that experiments at Menominee, Mich., have demonstrated that a certain quality of clay mixed with coal dust pressed into a compact form makes a very good fuel. Unfortunately, however, we are not informed of the quality of clay necessary, and as some qualities of clay are fully as expensive as coal, we are not able to say whether or not there is any merit in the discovery.

WHEN organized labor not only sets the price and puts under the ban everything not union, but goes further and undertakes to boss the business of its employers, as seems to have been the case with the plasterers of New York, it is time to call a halt. Any organization, no matter whether it is labor or capital, can accomplish much good, but other people's rights must always be duly considered in either case, or else what can and presumably is intended to be a benefit, becomes a menace to public welfare.

IT SEEMS to have started in New York City, but has now made the rounds of the country, that porous brick soaked with kerosene make an excellent fuel. There is nothing new about using oil for fuel, and it is growing in favor right along, and appliances are being invented almost every day for burning it. But the novelty of the brick idea seems to catch the fancy of the public and almost every prominent brick manufacturer in the country has had people calling and asking about it, and wanting to buy small amounts of brick to use in this way.

THERE are not only new things proposed about every other day for paving and flagging, but also many freakish things. A case in point is in the report of experiments at Baltimore in the use of sea grass for paving blocks. The sea grass or weeds, according to the report, is subject to pressure and is made into hard, solid blocks which are bound with wire, trimmed smooth and immersed in boiling pitch or tar. We are not informed as to the result of the experiments, nor do we know just how plentiful or how cheaply acquired the raw material is.

THERE is a note of warning comes across from England which foreshadows a relapse of the prosperity in the last few years. For 1901 a decline in wages has been reported for the first time since 1895, and during the first half of the present year the tendency has been toward still lower wages. The Treasury Bureau of Statistics, Washington, D. C., under date of October 19, advises that they have just received a copy of the Chamber of Commerce Journal, the official organ of the Chamber of Commerce, of London, containing this information, and the note of warning. The fall in wages was confined to the mining, quarrying, engineering and ship-building industries. This note of warning should have its echo on this side to the extent of due consideration by labor unions, for whether or not it indicates a little slackness in prosperity over here in sympathy with that of England, the subject is worth close study, and union labor should not be too arbitrary in its demands in the face of such conditions.

For the Retailer.

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The Opportunities of Business.

To make a pronounced success of his business the retail dealer should watch his corners as well as any other business man, if not more so, and every opportunity that presents itself with an offer of profit should be taken advantage of. We all recognize that fact, though, but we don't all see the opportunities when they present themselves. Moreover, some men will actually stumble all over an opportunity and never know what it is.

Failure to See Opportunities.

There is some kind of a saying about a man being so taken up with gazing at the stars over his head that he walks over diamonds that are under his feet without ever seeing them, but I can illustrate my point better with a failing my grandfather had. He was among the early settlers in Missouri, and, like all pioneers, was quite fond of deer hunting. The deer were there in plenty, and there was also an abundance of fine timber that would make a mill man's mouth water to-day. Now, grandfather had a great eye for timber, and he spent so much of his time looking up at the trees while in the woods that most of the deer in his path would see him first and scamper away.

That's the way it is about opportunities, and while they may not be as shy and elusive as the deer, some men can bag them where others never seem to see one. Opportunities, be it understood, do not come from any one direction, and the man that keeps looking one way for opportunities is likely to go empty-handed frequently. As a case in point, many a man is always on the lookout to buy bargains; he turns bargain hunter, and spends lots of his time hunting bargains that might better be spent hunting business. I do not mean to imply by this that a man should not give proper attention to purchasing his stock so that he may get his material as cheaply as is consistent with quality, but one's energy should not all be expended in that line. Divide it up and give the selling end of the business its share of attention, and keep an eye out for pointers. There is a limit to the attention one should expend in seeking bargains at the purchasing end of the business, and that limit is getting smaller every year.

Bargain-Hunting is Out of Date.

The men who manufacture goods do not do business in a hap-hazard way, as they did of old, so that you can play one against another and drive a bargain. They have taken to coming together in associations, have found out the folly of selling here and there at a loss simply to beat the other fellow; have figured out prices on articles manufactured by them that will give a fair margin of profit above the cost of manufacturing, and, as a rule, refuse to sell below that figure. This makes the bargain question one in which the gain is doubtful, for while opportunities may present themselves now and then for bargains, there is about two chances to one of getting the bad end when you buy a "bargain" in the way of inferior material.

Some Relief For the Mind.

This is as it should be, too, for any number of reasons. The manufacturer is entitled to a fair profit on his business, and no honest man would generally desire to furnish goods at a loss—unless driven to it because some other fellow was getting bargains. Fair prices for an article are those that hurt no one—make the manufacturer a profit, and leave a fair margin of profit for the retailer without making the price exorbitant to the consumer. This is what the earnest association workers among manufacturers are striving for, and it is good for all concerned. With a fair price basis, and a knowledge that he is getting his stock as cheap as the other fellow, the retailer's mind is left free for other work. He must still keep posted about the new things in the trade, where to buy them, and all that, but he need not lay awake nights studying how to work some manufacturer for a bargain. If he feels inclined to lay awake he can put in his time catching business opportunities—and he'll find it pays.

Do You Make Mortar?

It is impossible for me, or any other one man for that matter, to tell you just where and how you may find opportunities that will help your business, but we may all give suggestions that will enable some in the trade to help themselves. Take the matter of mortar for example, and ask yourself whether you have gotten as much out of this as you might. I know of dealers who have a mortar plant in connection with their business and instead of selling small lots of lime and sand to the builders for mortar they make a mortar and sell it. They have a man to make the mortar who knows the business thoroughly and make a point to always have a uniform mortar which they sell, I believe, at 18c a bushel. Just how many retail dealers follow this practice I do not know, or whether or not it would prove profitable at any certain location. The only point to me is to bring the matter to the minds of the retail dealers so that they can figure it out themselves whether or not business could be made by the furnishing of ready-made mortar to certain customers instead of the material to make it of.

Cement building blocks present another study worthy of the attention of retail dealers of building material, for if the demand for them is to become general, the man who is first in line with a good supply of the proper material will add something to his business profits and also to his reputation as being strictly up-to-date.

An Idea Worth Following Up.

There is one thing I would like to thoroughly impress on the minds of progressive retailers, and that is, that no matter what special thing in connection with your business you may take up, be the first in your locality to do it. Being first is half the battle—the first man runs the risk of success or failure in new lines, but when it is success he gets the best of it and the imitators that follow him simply get the leavings. Along with this idea, too, must come the understanding that you, and not the customers must, decide what they will want. Of course, the customers render the final decision, and would likely resent a dealer telling them out and out what they want. It is a fact, nevertheless that you must figure out what will please them and offer it for sale if you would keep up with the procession. For instance, when my wife goes up town to look for a new hat she does not go with the intention of telling the milliner what she wants, but to have the milliner show her what she should wear; and the milliner, to get the fashions for the season, does not go out among her customers to ask what they will have, but goes off to the manufacturers or creators of the goods and fashions for the season to get information. Of course, there is a difference between all this and handling building material, but there is an idea in there that is worth following up.

Study of the Fertilizer Question.

Take the matter of fertilizers, and the average farmer does not think of going outside of his own domain for fertilizers till he reads or hears something about what some other man has accomplished by the use of commercial fertilizers, and then he is likely to look at the matter as something distant from and foreign to his own affairs. But if right in his own community there is some dealer who brings the subject home to him he is likely to take a more direct interest. There is nothing in the world to prevent dealers who are in rural districts figuring out whether or not a general use of fertilizers of the right kind would benefit the farmers around him, and if he finds that it would do so, why not go after the business

in that line? It would have to be done intelligently, of course, but all business calls for the exercise of more or less brain power. The first thing would be a study of the general nature of the soil and the crops grown, and from this figure out the substance needed to give better results. In this part of the work the assistance of the manufacturers of fertilizers may readily be enlisted, for it is to their interest to help you in the matter. If the land needs lime, the matter is very simple, for your lime man can furnish you, and, no matter what the land needs, the manufacturers of the various fertilizing products will readily cooperate with you in figuring the matter out.

Building Paper and Insulating Material.

Another matter which it seems to me is not getting enough attention, especially at country points, is that of building paper and other insulating material used between walls and floors. In the old days very little attention was given to this subject anywhere. When a man wanted to build a house, he simply figured on an exterior and interior wall, with nothing between but the framing necessary to support the whole, but things are different now, and the exterior will is not only doubled, but paper or something of the kind goes between. The fact is pretty generally recognized, but there is paper and paper for this purpose, and other material, too, and the point I want to make is that I think dealers should look more closely into the different kinds of material offered for this purpose so as to be sure of getting what fits their trade best.

C. R. O.

Some Advice About Cement.

C. A. Brockett Cement Co., Kansas City, Mo.—At the present time we are selling all the goods that we can get. The only difficulty we have is in getting sufficient goods. Owing to the shortage of cars in this section of the country, it has been impossible to get lime from the kilns promptly, or cement shipped promptly. There has been a shortage of Portland cement in this market this season, and a very lively demand as well for natural hydraulic cements, the Fort Scott hydraulic cement being preferred to other brands in this market. There are two works at Fort Scott, Kansas, 100 miles south of Kansas City, manufacturing Fort Scott hydraulic cement, which is of very superior quality. In our opinion it surpasses any natural hydraulic cement made in the United States or elsewhere. From a copy of the report of J. A. L. Waddell, a celebrated bridge engineer, which we inclose herewith, you will note that the Fort Scott hydraulic cement after thirty days becomes as hard as the average Portland cement. If you wish to help the retail trade, or the natural cement manufacturers throughout the country, and do a good service to the consumers, you should help to educate them that the natural cements which are made at the present time with improved machinery, are sold at a price very little, if any, exceeding the price of ordinary lime. Therefore, the natural cements should take the place of lime for stone and brick work generally in building construction. Owing to the increased demand for Portland cement, and the increased manufacture in this country, there appears to be a craze to use Portland cement; and in our opinion, in many cases unnecessary. The leading brands of American Portland cement made in this country are equal to or better than the imported brands, and are a most excellent article. But the natural hydraulic cements, such as Rosendale, Akron, Milwaukee, Utica, Fort Scott, etc., possess great merit, and for ordinary stone and brick masonry, answer the purpose equally well as a more expensive Portland, and owing to their low price should take the place largely of the use of lime in stone and brick work. On more important jobs in large cities, and for railroad abutments and other heavy construction, as well as sidewalk work, where it is necessary that the cement should harden quickly, the Portland cements are preferable.

Please excuse this lengthy answer to your questions, but as retail dealers in all leading brands of lime, natural hydraulic cements, as well as Portland cements, we notice a great waste of money in the use of Portland cements for certain classes of work where a natural cement would be equally good. On the other hand, we notice many important buildings in this section built entirely of lime mortar, both in the stone foundation and in the brick work. This, in our opinion, is also poor judgment; especially when the natural hydraulic cements cost little, if any, more than the lime.

Letters From the Trade

SYRACUSE.

SYRACUSE, N. Y., October 20.—The Solvay Process Co. is building two mammoth stone crushers at their quarries at Split Rock. Each will have a capacity of from 1,500 to 2,000 tons a day. They are being built by the Austin Manufacturing Co. of Chicago, Ill. At present the stone is crushed by hand and transported over a bucket line to the plant of the company at Solvay, just outside the city limits of Syracuse. The company decided that hand crushing was too slow and put in the crushers. One crusher would do the work, but as the plant is run continuously day, night and Sundays, it is necessary to have two, one to supplement the other. The cable road has been extended throughout the quarries. The company has an immense deposit of limestone, and all the output is used at the factory of the company to make soda products. The company, a few days ago, celebrated its twenty-first anniversary by giving a dinner to the heads of departments and to a delegation from the Detroit works, which came here in a special car. The annual meeting was also held at that time, and these officers elected: President, F. R. Hazard; vice president and managing director, William B. Cogswell; treasurer, O. V. Tracy; secretary, G. E. Francis; general manager and chief engineer, E. N. Trump; assistant treasurer, G. W. Cory; assistant secretary, Louis Krumbharr. The election of the officers of the Split Rock Cable Co. was also held and these were chosen: President, John L. King; secretary, O. V. Tracy; treasurer, F. R. Hazard; general manager, E. N. Trump; assistant treasurer, G. W. Cory; assistant engineer, George Root. The Solvay Process Co. is the largest and most important industry in this part of the State. It was formed as the result of a display at the World's Centennial Exposition at Philadelphia. There William B. Cogswell saw some of the products of the factory of Albert and Edward Solvay, of Belgium. He visited them several times and finally promoted a company for the manufacture of the same products. A branch has also been established at Detroit, Mich. The company has just let a contract to a Buffalo contractor for building a pile dock 1,200 feet long in Onondaga Lake, which will make the water ten feet deep right up to the company's property. Large quantities of marsh land will be drained in the near future and many improvements made.

Hughes Bros. & Bangs, of this city, have the contract for 75,000 tons of stonework for the construction of the bulkhead basin at Stony Point shoal in Delaware Bay. The total of their bid was about \$90,000.00. The work must be finished by August 1, 1903.

At the annual meeting of the Syracuse Portland Cement Co. the following directors were elected: Edward A. Powell, John B. Dutcher, Hendrick S. Holden, Leonard B. Crocker, John B. Dutcher, David H. Burrill, Horace White, Charles P. Clark, Wing R. Smith and Charles M. Crouse.

The residents of the hamlet of Johnsonburg, N. Y., are excited over the discovery of salt on the farm of John Head. A well was sunk there in the hope of finding gas, and, to the surprise of all, a vein of very fine salt forty feet deep was struck at a depth of 1,500 feet. Experts claim that the well will produce 300 barrels daily. Leases on the surrounding farms have been secured and it is stated that a plant will be erected.

Central New York brick manufacturers say that they will find a ready sale for all the brick they have turned out this summer. In one case, that of George W. Pack & Son, the lack of soft coal was responsible for closing down their yard a few weeks earlier than is generally the case. Mr. Pack has a good stock of brick on hand and is filling several contracts in this city. He confines himself in manufacturing to common brick. Mr. Pack has a down-town office and handles cement, lime and other products, all of which have a large sale this year. The New York Brick and Paving Co. has received large contracts in Syracuse, New Haven, Conn., Hartford, Conn., and other Eastern

cities. The company is now loading boats for such places as can be reached by canal. Its large paving contracts will keep the company busy all winter, and there will be no shut down unless the coal supply gives out. This is not likely, as the company contracts for its coal. The report is that there is enough soft coal but that cars can not be secured. The company can only haul clay on the canal while navigation lasts. There is a pile on the yard now large enough to last until the canal opens again in the spring. The clay is brought several miles, one load being dumped into the machines and another in a pile for winter use.

The Onondaga Vitrified Brick Co. also has all the business it can attend to. C. & L. Merrick are busily engaged on large contracts in the Northern part of the State. The season has not been the best for brickmaking on account of the wet weather. Thousands of brick have been lost on this account. There is a prospect of considerable building another season, which will give the brickmakers something to do.

The Syracuse Mantel Tile and Marble Co. find a good trade this fall, especially in gas logs, grates and fireplaces. This is on account of the coal strike. This company has done a large amount of tile work and marble work on the new high school, and will probably have a good slice of the Carnegie Library work. They have put in 30,000 feet of hexagon vitrified tile in the old Fort Stanwix Hotel at Rome, N. Y. This is made by the Mosaic Tile Co., of Zanesville, Ohio. Next year there will be a fat contract for some one in the new court house and county clerk's building, which, it is estimated, will cost in the neighborhood of half a million dollars.

The Syracuse Stoneware Co. is making a great drive on flower pots, and is working its night gang.

A unique distinction has been conferred upon Charles A. Lockard, manager of the Empire Portland Cement Co., at Warners, and J. O. Nye, secretary of the Onondaga Litholite Co. Both were recently adopted into the Seneca tribe of Indians with appropriate ceremonies. Mr. Lockard was given the euphonious name of Mun-da-wah-o, and belongs to the Beaver tribe, and Mr. Nye was called He-no-wah-kak, and belongs to the Shipe tribe. The Indians called a council of their chiefs for the purpose of adopting these two men into their tribes. The Indians were dressed in their native dress and wore all their paint and feathers. Mr. Lockard and Mr. Nye are actually considered Indians by the Senecas, and have all the rights of that tribe. The fad of being adopted into the Indian tribes is becoming quite popular, and those who are fortunate enough to be adopted are glad of the opportunity.

The report of Superintendent Charles Hiscock, of the Onondaga Salt Reservation, for the season just closed shows that less salt was made this year than in any year since 1835. In that year the total production was 1,209,867 bushels. The total amount of salt inspected this year was 1,515,832 bushels. Last year the total production was 2,692,299 bushels. This shows a falling off of 876,867 bushels, or 32 per cent. The result is a deficiency this season of \$6,369.27. It has been three years since the State has had to appropriate anything for the reservation, and the duty of one cent a bushel charged the manufacturers has always been enough to pay the expenses. Mr. Hiscock expects that next year the deficiency will be made up. The trouble this year was the extremely wet weather, making the manufacture of solar salt almost an impossibility.

The Onondaga Litholite Co. is busy filling orders for material to be used in the construction of the new bank building, which is being erected by the Solvay Process Co. in Tully, a new church in Oneonta and the Danziger house in this city.

The Common Council of this city has voted for a bond issue of \$50,000.00 to raise money for dredging and walling up Onondaga Creek to prevent floods.

The officers and directors of the Onondaga Pottery Co. have adopted resolutions upon the death of Giles Everson a stockholder and director of the company. Mr. Everson was one of the wealthiest men in the city.

Waking Up to the Use of Cement.

Prusia Hardware Co., Fort Dodge, Ia.—There is nothing actually new that we can offer. Cement business is good, and the outlook ahead is good also. We do not handle lime, but handle hydraulic and imported and domestic cement. This section of the country is just now waking up to the value of cement for walks and curbing, and we have been unable to supply the demand in this line.

CHICAGO.

CHICAGO, ILL., October 25.—Employees of the brick and stone industries of Chicago have no reason to complain over lack of employment. Strikes here and there during the season have cut some figure in these and some kindred industries, but on the whole stone, brick, lime and cement products have had an unusual period of activity. Chicago has witnessed a bigger boom in building this year than ever before in its existence, save for the single year of 1892. Reports for the first nine months show that not only has more new buildings been erected in Chicago than ever before, except once, but has seen a decrease of the number of properties sold under foreclosure, and the men who supplied the materials of stone or marble, bricks, lime, cement and steel have all been generously and promptly paid for all they have as prime factors in this great building upheaval.

It is a rare thing at this prosperous time to hear any serious complaint among brick, stone, cement and limemakers, about the business situation. Of course there are always some grumbler, no matter how good the situation may be, but this class are at this time in the minority. The Chicago Brick Co., whose extensive yards are located at Brighton and Riverdale, on the Chicago Terminal Transfer Railroad, where they are working a high grade of clay, and turning out a superior quality of brick, have just issued a neat little book entitled, "Brick," devoted to a discussion of the brick question. It contains some valuable information which will be found interesting to architects and builders. P. J. Sexton is the president of the company and S. T. Jacobs, secretary, with offices at 302 First National Bank Building.

Danger of strife over jurisdiction between the Cement Finishers and Helpers' Union and Construction, Cement Floor and Sidewalk Layers' Union was removed on the 21 instant by the signing of an agreement as to the work to be conceded to each other. The former union will hereafter control all cement finishing. The construction men will control all mixing, grading and work pertaining to substructures. By the signing of an agreement the two unions will no longer prove a disturbing element in their class of work.

The Western Stone Co. has just sold to the Drainage Trustees their property of river frontage, South of Twenty-second Street, for \$13,784.00, allowing \$16,050.00 as compensation for removal of buildings and machinery. This property was valuable to the Western Stone Co., but its disposal will not seriously hamper them.

Just prior to the settlement of the anthracite strike great interest was aroused in the use of oil soaked bricks and solidified petroleum for fuel, on some successful experiments being made in this city with petroleum and terra cotta bricks. The news from Philadelphia that people there were buying ordinary brick and soaking them in coal oil for fuel purposes also attracted attention. At once some of the brickmakers here began to figure on the manufacture of a porous brick adapted to just such a purpose, as it was contended such a brick could be made easily that would serve the purpose, and could be sold for not over 2 cents each, and possibly at a penny each. The Chicago Brick Co. had calls from several persons who wanted to purchase petroleum bricks, while a number of brick piles along the streets where building was going on were despoiled of a goodly number. So great was the curiosity of some persons aroused by the story that ordinary brick, when soaked with kerosene, would make good fuel, that watchmen were placed at all the large buildings to see that the brick piles were not disturbed. As the coal scare is over the burning of brick as a fuel will not likely prove a bad.

After twelve long years of strife between the Marble Cutters and Setters' Union, of this city, and the contractors, an agreement has just been reached through the efforts of the president of the union, and H. Davidson, of Davidson Bros., so that peace, like a white dove, will spread its wings over all the factors in the long drawn out fight from this time on. The agreement was signed by Davidson Bros., Sherman & Flavan, E. P. Bagley, M. Keating & Sons, C. N. Marthens and the Henry Marble Co.

Architects and builders everywhere are just now watching with a good deal of interest an innovation in modern building construction which is being put to a practical test in this city, for the first time any where, in the substitution of cement for iron girders in flooring. The innovation is the project of Mr. James Gamble Rogers, the archi-

ROCK PRODUCTS.

tect, and the building in which it is introduced is to be occupied by the School of Education, in affiliation with the University of Chicago. It is well known that cement resists well to compression, and in the same way the architect holds it proper to put in a part in tension a material resisting to it, and steel resists well to tension. Then it is considered wise to make the floor of cement for the upper portion and steel for the lower, with concrete as material to keep the upper and lower members apart. Good cement, properly mixed, has proved itself to be durable and resisting to fire. In the building now nearing completion there is in all some 60,000 square feet of this construction. This construction was resorted to because it was impossible to get the steel in a large enough quantity inside of the time for the completion of the building. The engineers of the city said this span of twenty-five feet, the greatest known around here, was impossible to construct, but Mr. Rogers decided it was not.

QUINCY.

QUINCY, MASS., October 24.—There has been no let up in the granite business here during the month past. Many firms show an increase, and prospects are bright for a good winter season. A dearth of soft coal has been experienced consequent on the strike in the anthracite region. Polishing mills, and not a few manufacturers, have been greatly inconvenienced by same. Local coal dealers could not give their customers the usual supply, and many had to be sparing in their use of fuel. This drawback will be short-lived, however, as a sufficiency of coal will soon be available. Stock shortage, another bane to the trade, is fast disappearing. During the last month several manufacturers have been using Quincy granite, which was used in several buildings erected in Boston the first of the Nineteenth Century. These edifices are now in process of demolition, to make room for higher and more modern structures. The stock as to quantity and quality is of the best, and is easily worked into small cemetery pieces.

The Quincy Granite Quarries Co. is arranging the details consequent on its reorganization, so that before another month the entire plan of formation will be perfected. Manager Morgan, of the company, reports a brisk business. Shipments have been made in September and October from New Brunswick to Texas and all intervening points; 750 tons of finished blocks have been forwarded to New York City for use in the subway construction. The firm is also at work upon an 8x5x4-foot die of medium stock for St. Louis parties, and is also building an elaborate table with carved legs for a New Hampshire concern.

Harry Smith is the new superintendent of the Leyons Granite Co. in West Quincy.

Joss Bros. are building a soldiers' monument for the Seventy-third Regiment of Pennsylvania Volunteers to be erected in the National Military Park at Chattanooga. When completed the work will speak volumes for this enterprising firm, and will also redound to the fame of Quincy medium granite for monumental purposes.

Following is a partial list of visitors to the trade during the month past: R. J. Haight, *Monumental News*, Chicago, Ill.; M. Darden, representing Hilgartner Bros., Baltimore, Md.; M. Herb, Philadelphia, Pa.; W. H. Sarvis, Cincinnati, Ohio; E. Adler, New York City; Henry Sandring, New York City; J. N. Reed, Keene, N. H.; P. F. Eisenbrown, Reading, Pa.; Mr. Eby, of Flatz & Eby, Piqua, Ohio; W. J. Archer, Steubenville, Ohio; Mr. Mitchell, Schenectady, N. Y.; R. L. Hall, of the Sedgwick Hall Monumental Works, Charleston, Ohio; F. W. Nickerson, Hyannis, Mass., and Frank Cummings, Haverhill, Mass.

The shipment of rough and finished granite during September was distributed from the following depots: Quincy Adams, 3,841,331 pounds; West Quincy, 6,941,315 pounds; via Quarry Railroad, 5,135,220 pounds. Total, 15,917,866 pounds.

John Lawry left here October 22 for a visit to his old home in Cornwall, England.

New York's New Brick and Supply Co.

Empire Brick and Supply Co., 874 Broadway, New York, N. Y.—Relying to your inquiry in regard to the formation of this company we desire to say that this company was organized in August of this year under the corporation laws of the State of New York, with an authorized capital of \$1,500,000.00 for the purpose of manufacturing and dealing generally in all kinds of masons' building materials. The company has a capacity at present

for the manufacture of nearly 100,000,000 common brick per annum, with works at Glasco and Stockport, on the Hudson River, New York, and offices and distributing depots in New York City for the general handling of materials. The company has no connection in any way, nor does it in any way take the place of the old corporation (The Manufacturers and Agents Consolidated Brick Co.) which you mention. The condition of the building material business in general is somewhat unsatisfactory at the present time owing to the delay in the building operations caused by various circumstances, principally the lack of delivery of structural iron, and the manufacture of Portland cement and other materials is embarrassed by the present coal strike, otherwise the volume of business is greater than usual.

Developing North Carolina.

Mining developments are making rapid progress in North Carolina, and if the Southern Railway Co. is making equal efforts to bring the resources of the Old North State to the front there will soon be a prospect for a bright business future in view. Mrs. Marie Louisa Wyatt, of Faith and Salisbury, N. C., has been successfully promoting several important mining enterprises and introduced quite a number of the finest building and monumental stone into the market. She also started the manufacture of millstone from granite and is developing new quarries of stone hitherto unknown in the South. Through Mr. Joseph Hyde Pratt, of the University of North Carolina, she has arranged for an exhibit at the St. Louis Exposition of stones and abrasive material, particularly granite, which she is seeking to bring into the markets of this country. Mrs. Wyatt is also working some lucrative gold and copper mines, and has interested several Northern capitalists in her enterprises.

Making Extensive Improvements.

Iroquois Portland Cement Co., Caledonia, N. Y.—Relying to your inquiry in regard to changes we are making at our plant, will say that they are well under way and we hope to have them completed before cold weather sets in. We are building a large marl storage building 350 feet long by 50 feet wide, which will carry sufficient marl to run our plant through the cold winter months and not necessitate our shutting down on account of cold weather. We also expect to install new grinding machinery for our finishing grinding room; also, quite a number of other minor things at different points of the plant. Have been able to prove that it is possible to make high-grade Portland cement at a reasonable cost by drying marl and clay and burning it in rotary kilns similar to the process used in rock plants. We have not been running long enough to prove conclusively that this is superior to the wet or slurry process, but our conditions here are dissimilar from other localities, as our marl is what is called a granular marl which can be easily dried, differing from Michigan marls which are quite pasty and not easily dried. The process is being carried on at two plants at Owen Sound, Ontario, but as conditions are quite dissimilar there, it is quite evident from what I saw there during my recent trip, that they will not be able to make a success of it, and will find it necessary to change their plants to the slurry process.

Western Marble Developments.

The Denver Marble and Onyx Co., Denver, Colo.—We are glad to note that you are starting a campaign with a view to arousing interest in the development and more extended use of marble in this country. For your information, we beg to say that we are at the present time sawing a carload of marble, which has been shipped to us by the Crystal River Land and Improvement Co., from Gunnison County, Colo., for a test. The car contained four channeled blocks, two of which we have sawed into $\frac{3}{4}$ -in. and $1\frac{1}{4}$ -in. slabs, and we are glad to report that the larger of the two blocks sawed up absolutely sound, and produced a large amount of very fine slabs 9x4. This marble is much whiter than the Italian, with a dark cloud in it. The texture of this marble so far is not quite as fine or uniform as Italian, but as this car came from the surface and the deposit is of great depth, it is fair to presume that it will improve with depth. Upward of \$100,000.00 has already been expended in development work, and two Sullivan channellers and a force of men are steadily at work. This company has made no effort whatever to place their marble upon the market, and

as we understand it, do not intend to do so until they are in a position to fill any contract they may take without question.

Cement Work in Canada.

The Superior Portland Cement Co., Ltd., Toronto, Can.—Relying to your inquiry in regard to the cement industry we are developing, will say that we are selling our stock as fast as we expect, and the public is taking hold of the cement question in Canada with quite a bit of faith in the success of our Canadian works. We mail you a prospectus which gives the main points about our company.

[According to the prospectus, the plant is to be a ten-kiln, rotary, electrically driven by water power, and will make cement of marl and clay, the company having secured a marl bed at Orangeville, Ont.—Ed.]

Will Make Concrete Blocks.

Bellefontaine Stone and Lime Co., Bellefontaine, Ohio.—We are going to add a brick plant and make concrete blocks for building purposes.

Uses Air-Tight Lime Bins.

Fred. Daal, Belleville, Ill.—I have nothing particularly interesting to write about. I handle my lime in bulk exclusively to prevent air slackening and I ship in the winter and put it in airtight bins to sell in the hot months when lime is damaged in shipping. I am perhaps the only dealer in the country that handles lime in this manner successfully. I have a storage capacity of 5,000 bushels, and if any one wants to know more about it I will be glad to explain how I handle it.

Lime and Cement Trade Good.

Boutel Bros. & Co., Bay City, Mich.—Business in general here has been extremely good this season. Portland cement has been in good demand, and the lime trade has been unusually good, too. We deal in masons' and builders' supplies and are manufacturers of Kelly Island lime and asbestos hard wall plaster. We also deal quite extensively in coal and also coke and wood.

Cement the Coming Building Material.

W. C. Lebo, successor to the Ewing Co., Indianapolis, Ind.—Both the lime and cement business are good, and it is evident that cement is the coming building material. My business is general contracting of all kinds, and you could aid me by furnishing brick masons, as I have a large contract and judge I shall need much help in this line.

Business Is Good.

Frank S. Bale, Rome Ga.—I handle lime, cement, lath, shingles, fertilizers, etc., and business is good. The lime trade is good and the outlook for cement is also good. I wish I could get lower wholesale prices.

Rather Poor.

W. S. Merrell, Jeffersonville, Ga.—Business is poor and the outlook ahead is not very flattering.

Lime, Cement and Rock Salt.

T. J. Lindler, Jeffersonville, Ind.—Business is good in my line. I handle lime, cement and rock salt.

The First Dividend.

The Omega Cement Co., of Mosherville, Mich., has declared a 4 per cent. dividend, which it is said, is the first dividend paid by a Michigan cement company.

Brick From Pumice Stone.

Over in Germany, along the Rhine, they have a process of manufacturing brick from volcanic sand and pumice stone, in which instead of mixing cement with the pumice so as to form a solid cement block, the fragments of the pumice stone are simply covered with a thin coating of cement and then the pieces of pumice are molded into brick, and this coating of cement serves to hold the mass together in a solid block. No modern machinery is used in this work, as the stuff is simply poured into iron molds provided with detachable boards, the boards being used for driers after the removal of the molds, and after the brick is dried a short time it is ready for the market.

Salt.

The Saline Products of Death Valley.

We have before us two interesting reports on the saline product of Death Valley and Mohave. One is in the advance proof of Bulletin No. 200 of the United States Geological Survey, in which Mr. M. R. Campbell gives a report touching especially the borax deposits of this locality. The other report is from a California paper with illustrations of the salt and borax fields of that section of the country.

Mohave Desert is located in Kern, Los Angeles, and San Bernardino Counties, California, and lies in the angle between the Sierra Madre on the South, the Sierra Nevada on the West, and thence it stretches Eastward to Colorado River and Northward to Death Valley. This desert forms a part of the Great Basin. The most noted feature of the region is Death Valley, which lies fifty miles East of the Sierra Nevada and only a few miles West of the Nevada State line. This valley, about fifty miles long and from five to ten miles wide, is at its lowest point about 480 feet below sea-level, with mountains towering on either side nearly to the region of perpetual snow. Death Valley is regarded as the hottest place in the United States. At the ranch maintained near the mouth of Furnace Creek by the Pacific Coast Borax Co. the summer temperature is reported to reach 137 degrees in the shade; but by means of a double roof and running water, habitation is rendered possible even in this intense heat. Wherever sufficient water can be obtained, both in the Mohave Desert and in the Death Valley region, the soil proves fertile and vegetation is luxuriant.

Death Valley received its sinister name from the fact that in 1849 a band of emigrants wandered into the valley, and most of them perished from thirst before an avenue of escape was discovered.

Both reports agree in that borax was first produced from this district in 1864; that is, the natural borax was discovered.

At that time the product was worth \$780.00 a ton, while at the present it can be bought at 7c a pound. However, it was in 1890 that it was found that the borax crust on the marshes is a secondary deposit derived from beds of borate of lime in the Tertiary lake sediments of the region. This discovery revolutionized the industry. A mine was established on the bedded deposit at Borate, twelve miles Northeast of Daggett, San Bernardino County, California, and at the present time this plant, owned by the Pacific Coast Borax Co., is the chief producer of borax and boracic acid in this country.

The value of this deposit led to extensive prospecting and to the discovery in Death Valley of enormous deposits, far exceeding those now worked near Daggett. The borax of Death Valley, as well as that near Daggett, occurs in a regular stratum.

In addition to the borax deposit, Death Valley contains an immense salt field covering an area of thirty miles long and from two to four miles wide, the crust of salt averaging perhaps one foot in thickness.

According to the Government report the salt of this district needs refining before it can be placed upon the market, but according to the newspaper report the salt found at Salton is so pure that grinding is all that is necessary to prepare it for the market. Continuing, this newspaper report says that there are salt works at Redondo, Ocean-side, San Marcos, Coronado and Danby in active operation, while huge works are being erected at Long Beach.

Salt deposits directly alongside railways are being worked at present, but when it comes to quantity of the product, there is no country in the world that can compare with the "salt" area of the desert for rock salt. This article is found in more than twenty districts in the desert, much of it as transparent as window glass. One of the innumerable deposits is to be seen in the Saratoga district, San Bernardino County, where there is a ledge of a mile in length. Of this ledge a sixteen-foot center is composed of absolutely pure salt,

or as it has been estimated, 5,575,680 tons in the one deposit.

A picture of a house is shown at Dandee, built of rock salt, which is constructed of this material, because it was the handiest thing found for that purpose. A view is also shown of harvesting salt on the Salton sea in which the piles of salt shown resemble somewhat a farm scene in which meadow hay has been raked and piled.

Geologist G. E. Bailey, who has been at work for the Government in California, is quoted as predicting a great future for Southern California in connection with this saline product. At present he is quoted as saying, "The manufacturers of salt, soda and borax in Southern California are throwing away by-products which, to a chemical factory, are far more valuable than the material now sold. For example, in making salt at Coronado it has been found that the water especially is rich in salts of lithia and bromine, which are discarded with the residue of the vats. Yet we are shipping from San Diego County to Germany, lepidolite, from which German chemists extract lithia, placing it on the market. There are many other chemicals which will be produced here in the future."

Still another report a later one from California, states that Prof. Louis E. Arbury, of San Francisco, Cal., State Mineralogist, says there are deposits of nitre in and around Death Valley which surpasses the great nitre deposits of Chili. It is said that this report is leading to a stampede of prospectors to Death Valley.

"Nearly all the nitre beds," said Professor Bailey, speaking of his investigations, "so far discovered are situated in the Northern part of San Bernardino County and extend across the boundary line into the Southern part of Inyo County. They are found along the shore lines or old beaches, that mark the boundary of Death Valley as it was during the eocene times."

The Port Huron (Mich.) Salt Co. has been hampered some in its operations because of scarcity in coal.

The Gordon's Salt Co., Ltd., has been organized at Collier's Rents, Long Lane, Bermondsey, S. E., England.

It is said that a large deposit of epsom salts has been discovered a few miles above Golconda, Illinois.

John Fellwisch and others of St. Louis, Mo., have incorporated the Valley Salt Co. with a capital stock of \$10,000.00.

The Pennsylvania Salt Co. will enlarge its operations at Wyandotte, Mich., expending something like \$150,000.00 in the work.

The Royal Salt Co. of West Virginia has been incorporated with a capital stock of \$25,000.00, with offices at Pomeroy, Ohio.

The Ellsworth Salt Co. has been organized under the laws of West Virginia with a capital stock of \$50,000.00, to operate salt mines near Ellsworth, Kansas.

Green & Elliott, Chicago, Ill., contractors for drilling, are at work near Wellington, Ohio, prospecting salt property for R. R. Vermillion, of Wichita, Kan.

According to the New York *Commercial*, Nathan S. Beardsee, of Warsaw, N. Y., Frank P. McDermott, of Jersey City, N. J., have been appointed receivers of the New York Salt Co.

A company known as Egleston Mining and Developing Co., of Washington, D. C., which was recently organized with a capital stock of \$500,000.00, has leased the salt privileges from Benjamin Kiser, near Salton, Greer County, Okla., and will erect an extensive salt plant.

The E. H. Denniston Co. of Syracuse, N. Y., has a contract for erecting a salt plant for the Bradley Co., and C. C. Bradley & Son, of Syracuse, the two Bradley companies, of which C. C. Bradley is president, now occupying the building on Marsalle Street, and will move to the new plant when it is completed.

The plaster mills of J. B. Keen, at New Brighton, Staten Island, N. Y., has been hampered for the lack of coal, having been forced to close down for a few days on this account.

It is said plans are being prepared for a new plant to cost \$100,000.00, which H. A. Winters, of Sandusky, Ohio, and others propose to erect.

Plaster.

Time to Draw the Line.

According to the *New York Sun*, by reason of some differences existing between the Employing Plaster Association of that city and the Operative Plaster Society the plaster firms held a meeting recently at which it is said the following action was taken:

WHEREAS, The present unnatural condition of affairs existing in the plastering trade, brought about by a constitution passed lately by the Operative Plasterers' Society, and

WHEREAS, The interpretation of such constitution bring in a state of chaos, producing never-ending strife; therefore be it,

Resolved, That on and after Tuesday, October 21, the wages and rules prevailing prior to April 1, 1902, shall go into effect, until an agreement satisfactory to both the Employing Plasterers' Association and the Operative Plasterers' Society be signed by both of the parties.

This means a reduction from \$5.00 to \$4.50 in the daily wages of the men, those being the wages that they were getting before the employers, to settle a strike, acceded to their terms and advanced their wages 50 cents. A copy of these resolutions announcing a reduction in wages until the plasterers' union comes to terms will be given to every man who goes to work this morning and the employers say they can work or strike as they see fit.

"It was either that or go out of business ourselves," said the head of a big plastering firm to a newspaper man.

Since the employers gave in to the union in April, the union has been assuming more and more to run their business for them, and the employers say it is time to call a halt if they do not want to lose the management of their business entirely. What has principally led to this resolution on their part was a demand lately made by the union which has already led to a total suspension of work on the new Mount Sinai Hospital building. This demand was nothing more or less than that the plasterers working on a job should appoint their own foreman.

The foreman is the employer's agent and is responsible for the character of the work done, so this demand would mean the loss of the power of supervision, and the employers refuse to submit. They say that if they can not choose their own foremen to see that the men do their work right they would be running a heavy risk in taking any contract.

This action, as was expected, resulted in a strike, which at this writing is hampering building operations.

The American Cement Plaster Co., of Lawrence, Kan., is completing a gypsum mill at Watonga, Okla. This mill is one of the five owned and operated by the American Cement Plaster Co. The company has two plants in Kansas, one in Texas and two in Oklahoma, one being located at Blackwell. With the present facilities the company is unable to supply the great demand for its product. This additional mill will relieve the situation to a great extent. The mill will run day and night and employ regularly about twenty-five men. When in full operation five car-loads of the finished product will be turned out each day. The company's supply of raw material in the gvn hills is almost inexhaustible. Whenever one bed is exhausted the tracks will be removed to another one.

The Colorado Fire Pulp Plaster Co. has been incorporated with main offices at Denver, Colo., with a capital stock of \$200,000.00. The incorporators are: Howard W. Crocker, Joseph C. Houston, Charles D. Hendrie, Charles S. Haughwout, Bennett E. Miller.

The Greer County Gypsum Plaster Co., which recently incorporated at Mangum, Okla., has elected W. E. Whiteside, president and general manager, and will build a gypsum plaster plant with a daily output of 160 tons.

Cement.

The Portland Cement-Making Process.

[SECOND PAPER.]

We have talked about the raw material for making cement and the qualities required in it to make the production of the best Portland cement possible, and now let us forget that part of the subject for a while and turn to something else. It is an essential point, of course, and we have to consider that part of it, but the raw material of a required quality is essential before the beginning of the project for the manufacture of cement.

Raw Material From the Manufacturing Standpoint.

The fact of raw material once established, then begins the planning and figuring on the question of making cement, and the questions that come up here, aside from the quality of the material in the abstract, are frequently deciding factors in the ultimate success or failure in the undertaking. In the first place, raw material must be studied from a manufacturing standpoint, and comparison made of the cost of manufacturing from the different kinds of material. In this we are likely to get a little confused, too, if we are not very careful, because the material easiest handled in one part of the process is frequently most difficult in another. Take marl and clay for example. It is easier to grind and pulverize, but frequently it contains so much moisture that it calls for expenditures in the drying process that may in some instances amount to even more than the saving at the pulverizing part of the process. The point involved here depends quite largely on the relative cost of fuel and machinery.

A Matter of Location.

If cost of fuel is comparatively high, while the cost of machinery is low, owing to favorable location near the source of manufacture, it may be found advantageous to crush rocks rather than

dry the wet and softer material. On the other hand, if the location is such that fuel is cheap and easily acquired, the balance is in favor of the softer material, even though it calls for an extended drying process. It seems to me that the ideal raw material for cement under ordinary circumstances is a soft limestone commonly called rotten limestone, or chalk and clay. In other words, the softest possible material with as small amount of moisture as possible in its make up.

Limestone and Limestone.

There is limestone and limestone, and it seems to me that some of the hardest limestone I ever saw is that which is used in the Lehigh Valley district, while some of the softest was some samples from Southern Indiana, and belonging to what is known as the Oolitic formation. There is a wide difference, however, even in this Indiana Oolitic limestone, some of it appearing in hardness almost to the point of the hardest compact limestone known, and it may be found in almost all degrees of comparative softness from that on down to the point where you can almost crush it in your hand. Just what quantities there are of this soft material I do not know, for I have only seen some small samples, but any man who investigates Indiana limestone to any extent will very soon discover that there is a wide variation in its make up.

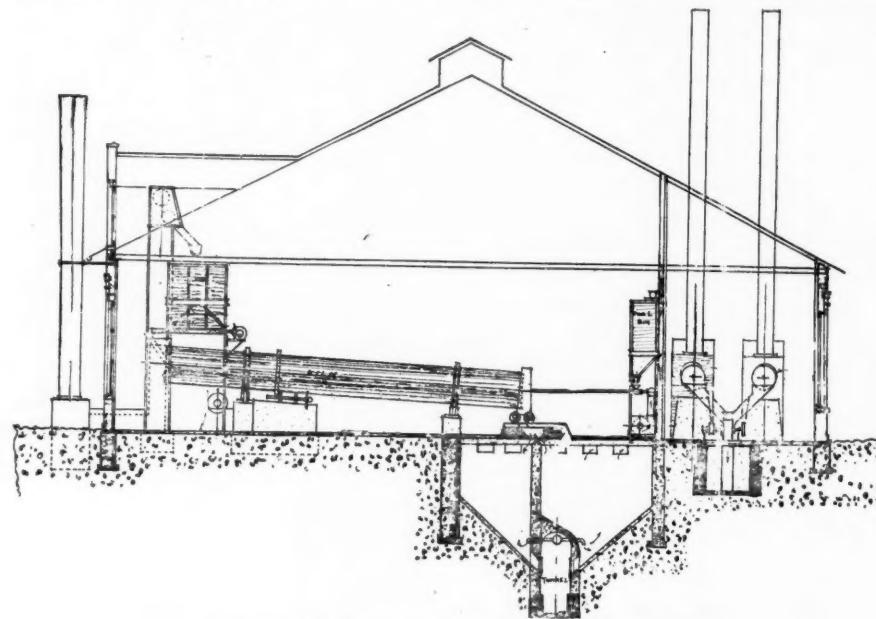
The Equipping Problem by Sections.

When engineers take up the subject of building a cement plant they usually divide it into four

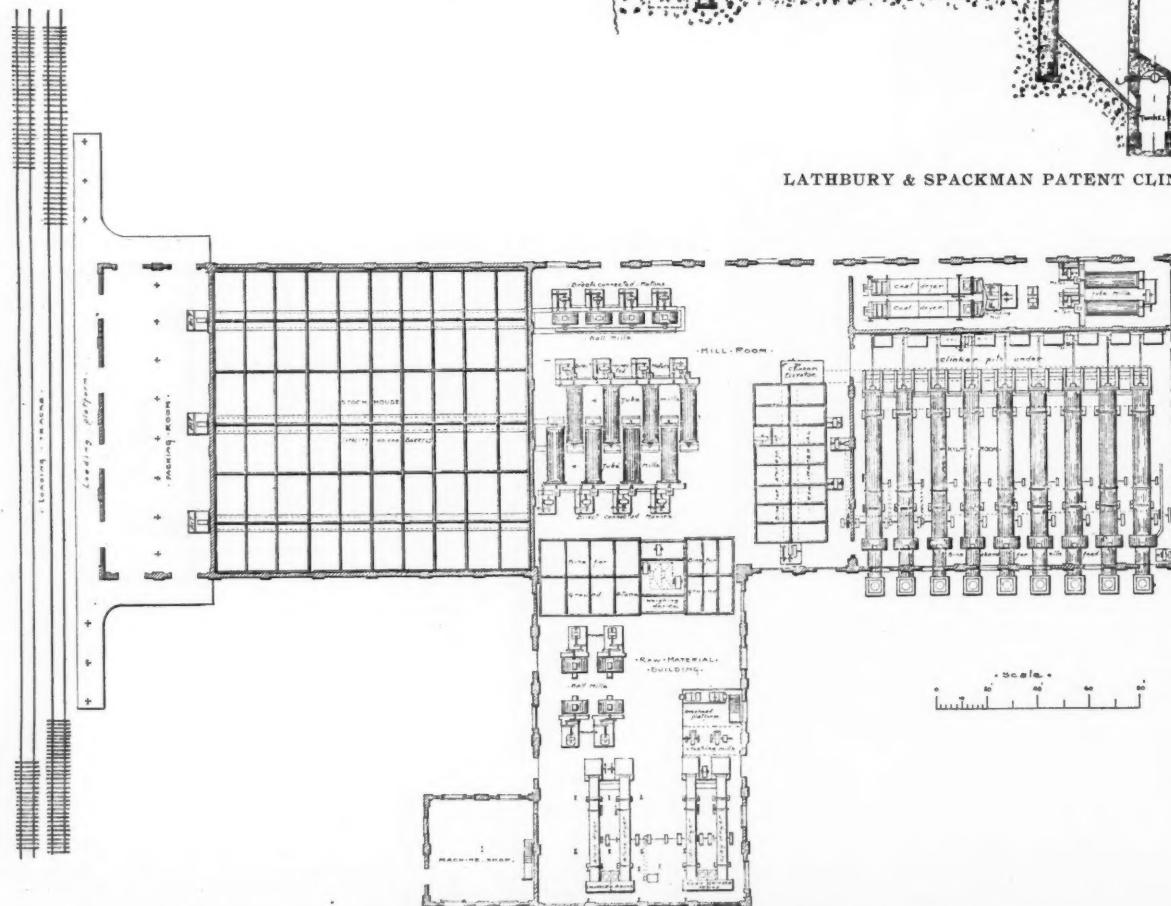
separate divisions; the equipment for getting out and handling raw material constitutes one division; the cement mill proper another division, the power plant another, and the auxiliary departments for cooperating and for repairing machinery, etc., makes up another division. There is one general idea, however, that holds good through the two main divisions of the plant, and that is the handling of raw material as much as possible with automatic machinery so as to keep the cost of production down to a basis where cement can be made and sold at a profit. The idea is not simply to reduce the pay-roll for labor, but it must reduce the cost of operation wherever labor is supplanted or else it is money thrown away. This may seem a queer way to state the matter, but the point I am driving at is this: If you put in an elevator or conveyor to convey the material from a point to some other point, when that elevator gets in the habit of breaking and choking, and by so doing causes you to have to stop the whole plant while it is repaired and does this very frequently it is certainly not reducing your cost.

A Study in Modern Construction.

This calls for a close study of contingencies in planning the equipment of the plant both in the mill proper and at the quarries. The danger of breaking must be given due consideration to begin with and elevators and conveyors of proper size and design used, but even this is not enough. The best of machinery will give down now and then and the wear and tear incident to machinery for



LATHBURY & SPACKMAN PATENT CLINKER COOLER.



GENERAL PLAN MILL BUILDING—ALSEN'S PORTLAND CEMENT WORKS, WEST CAMP, N. Y.

cement is probably greater than almost any other line of work, so where it is possible to do it without adding too much to the cost of equipment or running expenses some provision should be made for carrying in bulk more or less raw material at each step of the process, so that in case of a breakdown to the conveyor there would be reserve material to work on until repairs could be made. An example may be seen on this point in the construction of Alsen's Portland Cement Works, at West Camp, N. Y., by Lathbury & Spackman, in which storage capacity of at least one week's run has been provided at every stage of the process of grinding and mixing the raw materials, so that in case of a breakdown either the kilns or the grinding machinery can be run independent of the other. This plant, by the way, presents a study in modern construction of cement mills, because it represents the most advanced ideas in cement engineering. The material used is clay and limestone.

The quarry, located within 1,500 feet of the main buildings on the opposite side of the West Shore Railroad, furnishes the

limestone, which is hauled to the mill in small cars operated by a cable system. The entire quarry equipment, including the drills, is operated by electricity, the current being carried by feed lines from the engine room to the small building containing machinery for operating the drills.

The clay is excavated and afterward carried to the mill by belt conveyors. The limestone and clay are prepared separately and in much the same manner. The former first passes through jaw crushers to rotary dryers, and after being ground in ball mills, is conveyed to storage bins.

An Electrically-Driven Plant.

The clay first passes through a disintegrator in order to break up the lumps, then through a rotary dryer and after being ground to a powder is conveyed to storage bins located opposite those for ground limestone. Between these two rows of bins the limestone and clay are weighed and correctly proportioned, and the mixture afterward reground in tube mills. From these it is conveyed to the storage bins ready to be distributed to the individual bins feeding the rotary kilns, or if the mixture or fineness should be found imperfect, the material can be conveyed back to the weighing and mixing apparatus for correction. From the supply bins the mix passes through water-jacketed pipes to the kilns.

Ball and tube mills are used throughout the plant for pulverizing both raw materials and clinker. Conveyors and elevators were avoided as far as conditions would allow, and where it has been found necessary to use such devices, duplicate lines have been built in order to avoid stoppage of the plant should a conveyor or elevator become disabled.

The manner of handling the clinker of this mill was described in a previous article.

The plant is driven by electricity throughout, most of the machines being connected directly with motors.

How Troubles Come.

Some idea of the troubles that come when mechanical points of equipping a cement plant are not looked at closely, may be had from a study of failures among improperly equipped plants. There is an instance in the Lyme Regis Cement Co., Ltd., of England, which is having rough times. At a recent meeting of the company to consider ways and means, the president pointed out that the machinery kept going wrong. The crusher used to crush the coal to feed the rotary kiln was not working satisfactorily, and it took more horse power to drive it than they had calculated on. It had been proved he added, that they could make good cement by the rotary process. They had demonstrated that they could turn out rotary clinkers at the rate of 20 tons in twenty-four hours, and they had proved that cement made by the rotary process was of first-class quality; in fact, they had proved over and over again that they could make first-class cement in a rotary kiln! All these things were very satisfactory and showed decided steps of progress, but financially the concern had not made a success, so a scheme was proposed and adopted for liquidation and reconstruction of the company's finances. What the end will be, time only will tell, but so far results have not been satisfactory to the stockholders.

C. M.

The Rise of American Cement.

Taking its cue from some comments on the cement age in a Canadian paper the Treasurer of the Bureau of Statistics says that indications are not wanting that cement is soon to become an important factor in the industrial and commercial development of the United States. Its ready adaptability for use as building material, decorative purposes and street improvement is not only suggested by the erection of costly manufacturing plants in many parts of the Union, but is even more strongly suggested by the rapid increase in the production of cement during the past decade, and especially during the past five years. According to figures received by the Treasury Bureau of Statistics, the production of cement in the United States has actually doubled in five years, the total for 1901 being 20 million barrels, as against 10 million barrels in 1897; while during the period from 1892 up to the beginning of 1896 the production had remained practically stationary at about 8½ million barrels per annum.

That American manufacturers are beginning to take advantage of the home market for cement is seen by an examination of the official figures of the Bureau of Statistics relative to the commerce in this article. The exports of cement are very small. Prior to 1897 they were too insignifi-

cant for separate enumeration; in that year they amounted to 38 thousand barrels, valued at \$71,160.00, and have steadily increased year by year since that time, 392,462 barrels having been exported in 1902, valued at \$651,526.00. Meantime the market for foreign cement is becoming more and more restricted in the United States. In 1892 the imports amounted to nearly three million barrels, valued at a little less than four million dollars, the importations remaining practically stationary from that time until 1901, when they showed a marked downward tendency, being in that year 1,596,926 barrels, valued at \$2,198,891.00, and in 1902, 1,059,610 barrels, valued at \$1,478,452.00, the lowest point reached in the past fifteen years. While these figures are small in comparison with the volume of our total commerce, they are chiefly interesting as showing the tendencies in an industry which is still in its initial stages, but which promises to supply an important substitute for wood, stone and iron in the building and allied trades. The following paragraph from the *Toronto World*, though addressed primarily to Canadian readers, is even more applicable to conditions in the United States: "The use of Portland cement is in its infancy and the manufacture of it on a large scale is only beginning in this country. Cement promises to replace stone for all kinds of heavy foundations and other wall works, to replace stone for paving, to replace brick very largely for building, and to replace lumber where lumber has been used. Indeed, cement will soon be, next to steel, perhaps more than steel, the chief building material of this continent. Our houses will soon come to be of cement and every day sees the field for the use of cement growing at a surprising ratio."

The following table shows the production, importation and exportation of cement in the United States from 1893 to 1902, the figures of production being supplied by the Geological Survey, those of commerce by the Bureau of Statistics:

Year	Production, Barrels	Importation, Barrels	Exportation, Barrels
1893	8,002,467	2,812,336	not stated
1894	8,362,245	2,537,835	not stated
1895	8,731,401	2,649,679	not stated
1896	9,513,473	2,989,597	not stated
1897	10,989,463	2,347,752	38,490
1898	12,111,208	1,994,120	48,836
1899	15,520,445	2,086,053	64,122
1900	17,231,150	2,356,422	76,055
1901	20,068,737	1,596,926	218,240
1902	not available	1,059,610	651,526

CEMENT NEWS NOTES.

The Manheim (W. Va.) Cement Works are to be overhauled and repaired.

It is said that another cement factory is to be erected at Alpena, Mich., with a capacity of 2,000 barrels.

J. F. Fields and others are organizing a cement company at Hancock, Md., with a capital stock of \$60,000.00.

V. Cascino, of Mexico City, Mexico, is seeking to interest American capital in the cement business in Mexico.

The Iroquois Portland Cement Co., Caledonia, N. Y., is adding a new storage building to its plant to cost \$10,000.00.

Reports from Bedford, Ind., state that work is being pushed on the erection of the Midland Portland Cement Co.'s plant at that place.

The Peerless Portland Cement Co. has been buying additional marl and clay lands to supply material for its plant at Union City, Mich.

It is reported that the Altha Portland Cement Co., Altha, N. J., is to soon acquire the works of the Martins Creek (Pa.) Portland Cement Co.

The Farwell Portland Cement Co., which is building a plant at Farwell, Mich., will manufacture 1,000 barrels of Portland cement a day.

The Pyramid Portland Cement Co., organized at Detroit, Mich., some months ago with a capital stock of \$25,000.00, has filed notice of dissolution.

There are reports that a company is being organized at Easton, Pa., to be known as the Thomas Cement Co., which will manufacture Portland cement from blast furnace slag.

The Consolidated Rosendale Cement Co. has been troubled with a shortage of coal. Reports state that efforts to burn bituminous coal were not satisfactory and a shut down is in prospect.

N. K. Arms, of Tipton, Va., is said to have patented a process for making cement out of fur-

nace slag, and is seeking to organize a company to equip a plant to manufacture slag cement by this process.

The New Egyptian cement factory at Trenton, Mich., it is said will be ready for operation before March.

The Georgia Portland Cement Co. has been incorporated at Pierre, S. D., with a capital stock of \$1,500,000.00.

It is said that the Apollo Portland Cement Manufacturing Co., recently organized at Pittsburg, Pa., with a capital stock of \$500,000.00, has purchased 200 acres of land containing clay and limestone for making cement near Apollo, Pa.

The Southeastern Lime and Cement Co., Charleston, S. C., has recently contracted to furnish 50,000 barrels of Lehigh Portland cement to a concern making improvements for parties doing work on the Chattahoochee River near Atlanta, Ga.

Reports from Allentown, Pa., state that the Delaware River Quarry and Construction Co., Jersey City, N. J., has been awarded a contract to erect a cement plant for the Superior Cement Co. at Martins Creek, Pa. The plant it is said will cost \$1,500,000.00.

The Lehigh Portland Cement Co., Allentown, Pa., which has during the past summer erected an enormous plant at Mitchell, Ind., has recently been formerly authorized to do business in the State of Indiana. Their offices are at Mitchell, in charge of Thos. J. Roberts.

The car shortage is a fierce proposition with the retail dealers in order to supply cement orders. The price is not a consideration at all, the men are scratching their heads, squealing and coaxing, and hoping that more engines will drop down from heaven to prevent a worse condition existing in the shortage of cars.

We judge that our friends in the cement business out at Iola, Kan., are not only kept very busy but their stocks kept pretty well sold up, for we note that owing to water interfering with the operations of the works here lately there is almost a temporary cement famine at some of the Western cement companies.

The Western Canada Portland Cement Co. (Ltd.) is being incorporated at Winnipeg, Manitoba, Can., with a capital stock of \$1,000,000.00. The incorporators are: A. F. McLaren, M. F., of Stratford, Ont., president; A. F. McLaren Cheese Co. (Ltd.), of Toronto, Ont., and Dr. David Jameson, W. P. P., of Durham, Ont., president of the Durham Furniture Co.

The Helderberg (N. Y.) Portland Cement Co. at a recent directors meeting authorized the manager to double the capacity of their plant at Hawes Cave. At the same meeting the following officers were elected: President, T. Henry Dumary; vice president and general manager, Frederick W. Kelly; treasurer, James C. Farrell, and secretary, Edward L. Pruyne. A dividend of 9 per cent. was declared, payable October 1, 1902.

William P. Williams, Assistant U. S. Treasurer at Chicago, Ill., as trustee for the bondholders, has upon the request of a number of the bondholders of the Monolith Portland Cement Co., Ltd., Goshen, Ind., taken foreclosure proceedings against the company on a deed of trust for \$1,000,000.00, given by the company for the bondholders. The attorney for the bondholders is P. T. Colgrave at Hastings, Mich.

The Superior Portland Cement Co., Ltd., with offices at 4 Richmond Street, East, Toronto, Ont., held a general meeting recently and elected directors and officers. The officers are: Judge Morgan, president; Jas. McCullough, first vice president; C. C. Van Norman, second vice president; W. H. Jackson, manager; R. J. Daley, secretary; J. J. Follett, treasurer; E. E. Utley, auditor; J. W. McCullough, solicitor. The company owns marl and clay deposits near Orangeville and will erect a Portland cement plant with a capacity of 600 barrels a day.

The International Cement Co., which has been incorporated under the laws of New Jersey with a capital stock of \$1,000,000.00, will erect a plant at Elizabeth, Pa., to manufacture cement from furnace slag after a process discovered by Dr. Otto Wuth. The directors of the company include Joseph B. McCall, president of the Philadelphia Electric Light Co.; Charles A. Porter, a contractor of Philadelphia; James E. Hayes, a corporation lawyer of New York; W. H. Johnson, president of the Edison Electric Light Co., of Philadelphia; James B. Graham, Dr. Otto Wuth and Samuel B. Stafford, of Pittsburg. The officers of the com-

pany are: James B. Graham, president; W. H. Johnson, vice president; J. Morton Fultz, treasurer, and James B. Stafford, secretary.

The Giant Cement and Plaster Co. has been incorporated at St. Paul, Minn., with a capital stock of \$300,000.00. The officers are: Michael P. Ryan, of St. Paul, president; George Williams, of Minneapolis, vice president; A. Greve, of St. Paul, treasurer; L. P. VanNorman, of Minneapolis, secretary. Other stockholders are: William P. Westfall, of St. Paul; H. H. Coleman, of Minneapolis, and Bertice H. Scott of Minneapolis. The new company will manufacture hard wall-plaster and will enter bids at once for contracts in connection with the buildings at the St. Louis Exposition. The patents under which it will work are the property of George Williams, of Minneapolis, and have been used heretofore by a Minneapolis corporation. Under the new arrangement the old corporation disappears and the State rights in the Williams patents go to the new company. Options have been secured on a tract at Sabula, Iowa, where there are deposits of cement rock. The company has also acquired a large four-story building formerly used for a packing house, and will begin work within a few weeks. George Williams will be business manager. It is intended to add hydraulic cement and Portland cement to the output of the company before spring.

Quite a Number of Rejections.

Mr. A. W. Dow, Inspector of Asphalt and Cement, etc., for the District of Columbia, recently rendered his report for the fiscal year ending June 30, 1902. In his report to the Commission tabulated statements were presented showing the number of tests made, in which it is shown that 2,641 barrels of cement were rejected out of a total of 54,951.

Mr. Dow states that 52 per cent. of the rejected cement was discarded because it set too quick, 4 per cent. on account of slow setting, 33 per cent. for being too coarse, and 12 per cent. for being too low in tensile strength. It is stated that 80 per cent. of the cement rejected was sound, and would be suitable for certain kinds of work, but was unfitted for the particular purpose for which it was furnished.

In testing cements used in public work a 10 per cent. sample is taken, and each sample analyzed separately. The failure of one sample to pass the specification is considered sufficient cause for the rejection of the entire lot.

THE OHIO SANDSTONE INDUSTRY.

(Continued from Page 1.)

from the cut stone is carried away by a blast as soon as it is made, rendering such work more healthful than before this was applied. The largest sized grindstones are not gotten out at Berea, but at other quarries of the Cleveland Stone Co. stones 7 feet 11 inches are sometimes quarried and turned, while lathe grindstones are made as small as five inches in diameter and one inch thick, and small kitchen grindstones from six to twelve inches in diameter.

WHETSTONES FILL IN WHEN WORK IS SLACK.

Around the works at Berea great piles of these made grindstones are seen, either in crates ready for shipment, domestic and foreign, or piled up ready to be taken into the near-by frame factory where all the necessary wooden parts of the frames are made and put together, and where the metal parts are brought, and after being enameled or painted, are put together, all the parts necessary to one complete grindstone being packed and made ready for shipment. These grindstones are set up in various ways for use with crank, treadle and power, and have roller and ball bearings. The grindstones up to a weight of 200 pounds are sold by the actual weight on scales as they come from the lathe, while above that they are sold by measurement weight. The stones selected for the scythe stones, whetstones, ax stones, rubstones, etc., while they are no where near so large as the grindstones, all have to be broken, sawed and split into the required size and then rubbed smooth on large wooden wheels, into which small pieces of iron and steel, generally scraps of steel from worn out saws are imbedded to prevent unnecessary wearing away of the wood. They are then labeled, packed into boxes and ready for shipment. Much of this work is done during the winter months when on

account of the freezing of the stone the men are not able to do more in the quarry than strip the quarry and move the machinery for next year's work. This gives employment to many who would otherwise be thrown out of work.

SOME OF THE OPERATORS.

Other companies operating in Cuyahoga County besides the Cleveland Stone Co. are The Deerlick Oilstone Co. and Forsyth Bros., of Chagrin Falls; The Pratt Stone Co., Independence; The Independent Stone Co.; Mr. W. H. Caine; Reader Stone Co.; The Forest City Stone Co.; The Malone Stone Co.; Maxwell-Rolf Stone Co., and the Independence Stone Co., of Cleveland. Although the above companies have the main offices at Cleveland, the towns where the quarries are situated are Berea, Chagrin Falls, Cleveland, Euclid, Fairmount, Independence, Olmstead Falls, South Euclid and West View. Other counties producing grits for abrasive stones are Lorain, Summit, Jefferson, Harrison, Washington and at Massillon in Stark County.

THE FAMOUS "CANYON" QUARRY.

However, the most famous of all the sandstone quarries in Ohio, producing either building stone or abrasive stone are the quarries or rather quarry of the Cleveland Stone Co. at North Amherst, Ohio, and known as the Canyon quarry and producing the stone known to all builders as "Gray Canyon" stone and "Buff Amherst" stone.

This quarry is about two and one-half miles West of North Amherst, and is perhaps the largest quarry in the United States. It has a quarry face of about one and one-half miles and is over one hundred and sixty feet deep. To an outside observer the quarry looks like an immense boulder which by action of time and various agencies has been covered with earth, which the hand of man has found, stripped and hollowed out for his own purposes. The strata are most horizontal, but at each end the stone is at a slight angle and tending to the horizontal in the center, which, together with the mound-like effect of the quarry to the surrounding country, carry out the impression of the boulder effect. The quarries at Amherst are in truth a series of ledges which formerly formed the shore cliffs of Lake Erie and the roads and soil between them show the sandy beach-like character. A railroad runs down a rather steep incline into this gigantic quarry, and the quarried stone is hoisted upon the cars, perhaps split there into various widths for curbing, flagging, grindstones, building rock or whatever purpose each separate stone is designed, or even brought out of the quarry a solid block with no further work done upon it than the necessary scabbing. The splitting is done simply by the plug and feather.

TWO CENTERS COMPARED.

The quarries at North Amherst furnish more building stone than those at Berea, less stone for flagging and curbing, and more for grindstones. The different strata are not applicable for the same purpose, which depends on the hardness and texture of the stone. The softest and most uniform is made into certain kinds of grindstones, while the finest grained goes for whetstones. For building as well as grindstones is used the stone of medium hardness and uniform texture, and for

building stone alone is used the hardest stone not sufficiently uniform for grindstones, but which dresses well, while the stone that presents the greatest difficulty is used mostly for bridge stones. The stratification of the stone is of considerable interest, and noted by the quarry men as "split rock" where the rock is regularly and evenly stratified, "spiderweb" where it is irregular and crossed by transverse wavy lines, and the "liver rock" which shows little or no stratification and splits equally well in any direction.

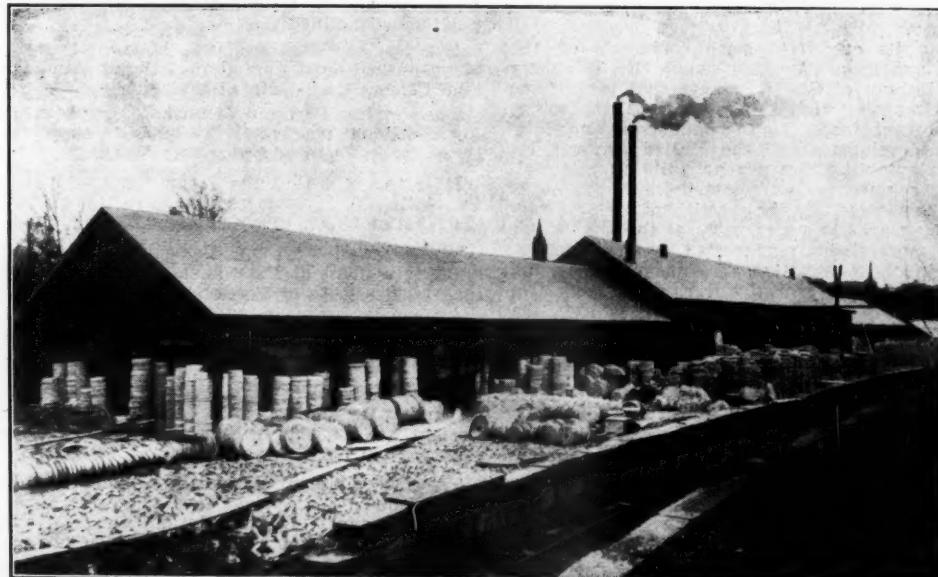
The color of the stone at North Amherst is blue and buff, and the blue differs from the Berea stone in that it is slightly darker. This difference in color in these two stones is partly due to the fact that at Berea the stone lies below drainage and is covered by a layer of shale and dirt clay and thus kept excluded from the action of atmospheric agencies, while at Amherst the stone lies high and has for ages been subjected to the action of atmospheric water which has thoroughly soaked it and oxidized all the iron contained in it. In this way is formed the buff stone, or water-colored stone. Some of this, especially the top layers, has been so injured and broken up by atmospheric agencies that it is not used, while other of the buff stone is the finest product of the quarry. The mixture of buff and blue, while perfectly good stone, is not readily salable and constitutes one of the wastes of the quarry.

Besides at North Amherst, the Cleveland Stone Co. also operates in Lorain County at Kipton, Oberlin, Columbia and Brownhelm, while other companies operating in this county are the Malone Stone Co., North Amherst; Grafton Stone Co., Grafton; Mussey Stone Co., Elyria; Forest City Stone Co., Columbia; Elyria Stone Co., Grafton; and the Independent Stone Co., at North Amherst, each quarry being noted for some special kind of stone.

A SIDE LIGHT.

The extreme popularity of Cuyahoga and Lorain County building stone is shown by its extended use for building purposes, buildings either erected of or trimmed with the stone being found in every city of any size in the United States, and all the principal cities of Canada. Its greatest rival is the Bedford limestone, which possesses the quality which is the greatest drawback to the Ohio stone. This is the extreme hardness which the stone attains after exposure to the air, when the quarry water has evaporated. This hardness prevents its being easily worked, and while almost any degree of excellence may be attained in working the stone—that is, in dressing it and carving it—it is very costly to have such work done, both from the length of time necessary to accomplish the work and the excellence of the tools necessary to withstand the grit of the stone. The Bedford stone, on the contrary, while having almost equally desirable coloring, is very easily worked and takes carving nearly as well. Within the last few years the Bedford stone has been pushing the Ohio stone, as a building stone, to a considerable extent in the Eastern markets, and the largest Ohio company, the Cleveland Stone Co., as represented by the American Quarries Co., has bought a large tract of land in Lawrence County, Indiana, and is installing machinery preparatory to opening large quarries.

A. C.



GRINDSTONE WORKS OF THE CLEVELAND STONE CO., AT BEREAL, OHIO.

Stone.

The Woodbury Granite Co. has opened up a new quarry near Bridgeport, Va.

The G. H. Cutting Granite Co., Worcester, Mass., will locate at Peekskill, N. Y.

The Independent Stone Co. has opened up a new stone quarry near North Amherst, Ohio.

L. P. Barker & Son, Batavia, Ill., have sold out their quarries to the Batavia Supply Co.

Misho Bros., Sauk Rapids, Minn., have installed air compressors and added pneumatic tools.

The Hudson River Bluestone Co. has installed a new crane at its works in Ponckhockie, N. Y.

The J. B. Luckey Stone Quarry at Bowling Green, Ohio, has again commenced operations.

The Coalgrove Stone Co. has been incorporated at Ironton, Ohio, with a capital stock of \$10,000.00.

O. Oberich, of Sheboygan, Wis., and L. F. Oehlman will open up a marble works at Oconto, Wis.

The marble business of Claar & Farrar, at Jackson, Ohio, has been purchased by Edgar Farrar.

Smith & Craven, have purchased the granite plant of the Comstock Granite Co., Montpelier, Vt.

The Hudson River Blue Stone Co. is installing a new 20-ton crane in its quarry at Pouckhocking, N. Y.

The Arnold Granite Co., East St. Cloud, Minn., has been shipping some crushed granite to Nebraska.

A. A. Garlinghouse & Son, Homer, Mich., have outgrown their present quarters and will enlarge their works.

The Trigg Marble and Granite Works, Rockford, Ill., has recently installed air compressors and added pneumatic tools.

It is reported that the James Forrestal Co., St. Paul, Minn., will install the largest stone crushing plant in the Northwest in that city.

The Royce Marble Quarry, Brandon, Vt., has been hampered in its operations the past month on account of lack of coal.

The plant of the Bay State Broken Stone Co., Linton Highlands, Malden, Mass., was destroyed by fire October 9. Loss, \$8,000.00.

The Gouverneur Lead and Garnet Co., Gouverneur, N. Y., is preparing to begin operations at their garnet mill and mine.

The Artificial Granite Co., Colorado Springs, Colo., are adding to and extending their recently acquired plant for making artificial stone.

The Delaware Granite and Mining Co. is enlarging its operations in making improvements at its plant at Wilmington, Del.

R. F. Angelo & Bro., Santa Barbara, Cal., have a fine sandstone quarry and are able to get out stone of any dimensions.

The Evans Marble Co., Knoxville, Tenn., is getting out some marble work for the interior finishings for the Government building at Honolulu.

The Rutland-Florence Quarrying Co., Brandon, Vt., have moved into their new quarters and given up the mill they operated under lease during the past year.

The Bessemer Limestone Co., Martinsburg, W. Va., has been hampered in its operations on account of lack of coal, being compelled to shut down its quarries for a while.

The Colorado Fuel and Iron Co., Pueblo, Colo., will open up limestone quarries at Howard, Colo., in addition to the quarries operated for fluxing material south of Pueblo.

The Coral Marble Co., Chamber of Commerce Building, Cleveland, Ohio, contemplates establishing a marble works at Parkersburg, W. Va., to make marble structural work.

The Colusa Sandstone Co. has been incorporated at San Francisco, Cal., with a capital stock of \$200,000.00. The incorporators are: F. E. Knowles, Abel Hosmer, Oakland; William Hosmer, Thomas Bradbury, San Francisco, Cal., and others.

Some blocks of blue sandstone from Allshouse quarries near Greensburg, Pa., were recently quarried and brought to that town, which are said to be the largest ever quarried in Pennsylvania, being 20 ft. and 8 in. long.

It is said that Oliver Bros., the famous chilled plow people of South Bend, Ind., will open a stone quarry in the Bloomington, Ind., district, which will be the largest quarry ever opened in the Oolitic district.

W. H. Bates has moved his marble business from Galva to Cambridge, Ill. A. W. King & Co., of Galva, have leased the buildings vacated by Mr. Bates and will move their marble and granite business to his old place.

The Eureka Stone Co. has been incorporated at Eureka Springs, Ark., with a capital stock of \$60,000.00. The officers of the company are: S. F. Stahl, president; W. C. Chynoweth, vice president; B. J. Rosewater, secretary, and L. P. Badger, treasurer.

F. W. Mould, who was formerly bookkeeper of the Drew Daniels Water Co., Waterbury, Vt., has purchased the interest of Mr. Pike in the stone business of Pike & Boynton, at Morrisville, Vt. Mr. Pike, who retires from the business, will conduct a retail establishment at that place.

The Winnsboro Granite Co., Winnsboro, S. C., have secured contract to furnish granite for the new Pennsylvania Capitol at Harrisburg, Pa. The contractors have to furnish over \$1,000,000.00 worth of granite, and it is said to be the largest granite contract ever let in South Carolina.

A recent issue of the *Stone Trade Journal*, England, contains a picture of a fine block of Cilician marble recently taken from the quarries of Messrs. Walton, Goody and Cripps at Sagra. The block is 40 ft. by 25 ft. by 20 ft., and is estimated to weigh 1,500 tons.

The Bodwell Granite Works, Vinal Haven, Me., are furnishing what is said to be the largest granite pillars ever quarried in New England for a cathedral in New York. Each of the pillars are said to weigh 310 tons in the rough and 200 tons when dressed.

The Webb Granite and Construction Co., Worcester, Mass., now has a new home, 40 Crescent Street, where a building has been erected at a cost of \$10,000.00, putting the offices in closer touch with the Crescent Street yard. The building is constructed of New Hampshire granite from the company's quarries, and is 35x50 ft. and two stories high.

The Standard Stone Co. has been incorporated at Washington, D. C., with a capital stock of \$250,000.00. The incorporators are: Percy H. Russell, J. Wilson Bunn, T. Franklin Athey, Albert Lake and J. A. McCrary. The officers are: Percy H. Russell, president; T. Franklin Athey, secretary-treasurer, and Albert Lake, manager. The company will absorb the Washington Litholite Stone Co.

The Columbian Marble Quarrying Co., of which J. F. Manning is president, has bought the property of the Columbian Marble Co., Rutland, Vt., of which Rockwood Barret is manager. The property was operated under lease by the Columbian Marble Quarrying Co. for several years, which has been steadily increasing its capacity and improving the plant. The new quarry has recently been opened up and a 40-ton derrick installed.

The stonecutters who have an average wage of \$3.00 for an eight-hour day should be satisfied, especially when they have steady employment the year round. There is no reason why the union should demand that that should be the minimum price, for the bosses then will find it necessary to adopt some means to take care of the fellow who isn't worth \$3.00 a day, and the man who can earn this will suffer with the employer. We trust the laborers will not be too aggressive in their demands, for that will mean more strikes, and in the end loss to all parties, and especially loss to the laboring man.

AMONG THE QUARRIES.

Ezra Parmlee, Hudson, Mass., is opening up a quarry near Sheffield.

The Sibley Quarry Co. has been working at Trenton, Mich., to keep up with orders.

The Carthage Quarry Co., Carthage, Mo., is increasing its capital stock from \$20,000.00 to \$40,000.00.

The quarry property of Haisler & Gregg, Cedar Rapids, Iowa, has been sold to H. E. Freeze, W. G. Haskill, M. J. Haisler and Mr. Gregg.

J. F. Oatley, Killingly, Conn., is to open up an old granite quarry near the Rhode Island line which was in former years considered very valuable property.

The County Board of Milwaukee, Wis., is desirous of securing land contingent to that city containing stone which can be used for road purposes and will advertise for quarry.

The firm of Haley, Ward & Burns, Watertown, N. Y., has recently bought a new quarry of about six acres, and it is said they will erect a plant for supplying building and crushed stone.

S. D. Coykendall, of the U. & D. Railway Co., has bought the Redman stone quarry near Griffin Corners, N. Y. The railway company will work the quarry to get out stone for bridge and building purposes.

The new Caffe-Newell quarry at Carthage, Mo., which has been incorporated at Carthage, Mo., as the Carthage Building Stone Co., is erecting derricks and otherwise equipping its quarry property.

The David M. Andrew Co. has been incorporated at Baltimore, Md., with a capital stock of \$15,000.00, for quarrying marble, etc. The incorporators are: David M. Andrew, James Andrew, David W. Andrew, Hugh Andrew and James M. Andrew.

The Thomas N. Lee Co., of Baltimore County, Md., has been incorporated at Towson, Md., with a capital stock of \$10,000.00, to operate limestone and marble quarries. The incorporators are: Thomas N. Lee, Alexander L. Mitchell, W. H. DeCourcey Wright, Carrington G. Arnold and Cassandra L. Arnold.

The Montana Marble and Mining Co. has been incorporated under the laws of the State of Washington to develop marble property near Helena, Mont. The company has been incorporated with a capital stock of \$1,200,000.00. Among those interested are: Judge W. Y. Pemberton and A. M. Baldwin, Spokane, Wash., and Col. W. E. Embry.

Reports from Monson, Me., say that the city slate quarry has been sold to Chas. Wier, of Lowell, Mass., H. T. Molton, of Salem, and Harry Waite, Boston, Mass., as trustees for the bondholders. The work which has been conducted by the Monson-Burman Slate Co. will be carried on by these trustees, whose agent is E. F. Barnard, of Worcester, Mass.

SAND.

C. J. Bolte has bought a sand and gravel pit of H. E. Nemeier, Columbus, Ohio.

The Potomac White Sand Co. is preparing to erect a sand plant at Springfield, W. Va.

The storage house of the United States Silica Sand Co., at Ottawa, Ill., collapsed recently, doing considerable damage. The structure is to be rebuilt at once.

The Hoosier Glass Sand Co. has been incorporated at Coxsackie, Ind., with a capital stock of \$100,000.00. The incorporators are: Edw. Bliven, Edw. Martin and others.

The Crab Creek Sand Co. has been incorporated at Columbus, Ohio, with a capital stock of \$10,000.00. The incorporators are: W. A. Kingsley, John T. Harrington, A. L. Rowland and F. W. Black.

A sand plant is being erected at Rob Roy, Ind., to manufacture glass sand. The plant is being put up by G. T. Buckingham, W. C. Johnson and others who are organizing a company with a capital stock of \$50,000.00.

The Warsaw Sandpaper Co., Warsaw, Wis., which has had its plant shut down for some months has started up again, and expects to run steadily. The plant has been closed down to install an equipment of machinery, and it is said that every old machine has been taken out of the plant and replaced with new.

Editorial Rambles.

THE BARRE GRANITE FIELD.

Every once in a while we see an article in some paper referring to the marvelous growth and development of some particular city in the country and a brief history of the industry that is the moving spirit in its wonderful development. Away up in the green hills of Vermont "where we used to believe nothing was to be seen or met with except the everyday farmer and the busy woodman," and a wonderful deposit of marble, there has arisen a city and an industry that is making a name for herself, and the State of Vermont.

WHEN THE INDUSTRY BEGAN.

About twenty-five years ago the village of Barre was a good type of regular country village in Vermont, holding its own in population from year to year, but never dreaming nor even aspiring to be anything more than a typical Vermont village. About that time a few men began to actively bring on the market for monumental purposes a beautiful gray granite, of which there was very large deposits, on Millstone Hill, about three miles above the village. It slowly took its place on the market, along with the Quincy and Westerley granites, and in about five years had established a foothold for itself which has led up to the proud position she now holds, being the leading monumental center for granite in the world. About twenty years ago there was about fifty men employed at Barre in the manufacturing of her granite into monuments. This has steadily and rapidly increased until to-day there are over two thousand cutters employed in the city and its immediate vicinity, and at least two thousand more find employment at the quarries and polishing mills and sheds.

A COSMOPOLITAN CITY.

This is not the result of any unnatural boom, but springs from a natural demand for granite that fills all the requirements of the monumental trade. To meet the demands of the trade for this granite, Barre herself was unable to supply the necessary amount of skilled labor required, but men began to come in from all parts of the country and from Europe, and in a few years a large number of the most skilled mechanics of this country had settled here; also a large number from the granite centers of England, Scotland, Ireland, Italy, Switzerland and Sweden, thus forming the nucleus of what is probably the most cosmopolitan city in New England.

One strange feature in the development of this industry here is the fact that it remains entirely in the hands of those who created it. As there has not been any great influx of outside capital such as is generally drawn to any place where the chances of a man ready to speculate are as good as they have been here, but thrift, energy and determination to succeed have taken the place of outside capital so far in an acceptable manner, and will still attend its future development. We have often been astonished that the wonderful growth of this city and industry has not attracted more outside capital, as the steady increase in land values that have gone on the last twenty years are most remarkable and we feel assured that the same is only in its infancy. The demand for granite for monumental purposes has been such that it has always taxed the production of

building purposes as far as quality is concerned. The railroads realizing the immense traffic this will create are paving the way with rates that will enable the product to be marketed for these purposes in most all the principal cities in the country, and in a few years it is likely that Barre granite will be used in the construction of the best buildings in the country.

FRIENDS OF UP-TO-DATE MACHINES.

The manufacturers and the quarry owners here are always on the alert for any machine or power that will enable them to lessen the cost of production, or improve the quality of their product. One of the latest of those improvements to be adopted is the pneumatic drilling machine, patented and manufactured by H. G. Kotten, of New York City. The machine is a hand tool used to



QUARRY OF E. L. SMITH & CO., BARRE, VT.

the quarries to their utmost, and it has not been necessary to seek the larger markets of the paving and building trades. This is something that will be taken up in the near future and will treble the present output for monumental purposes. There is nothing in the market to compete with it for

make the small holes in general use for cutting most all kinds of stone, as well as granite into dimension sizes. The machine is very simple and can be handled by any one, and will do the work of several men. It is a fitting companion to the steam and air drills and will be a great factor in the quarrying trade in the future. Orders for them have been placed by all the principal quarry owners here, and in a short time they will be seen in every quarry in the country, for the saving in labor that they accomplish is such that no one can afford to do business without them. The spirit shown by the quarries and the manufacturers here, to adopt all kinds of machinery that tend to improve the quality of the work or cheapen the cost of production, has been a very important factor in the development of this great industry, and any one who has anything in this line that is an improvement on present methods has only to come here and show it to be practical and economical and he will find a ready market for it.

A PIONEER CONCERN.

One of pioneers in the granite industry here is the firm of E. L. Smith & Co., who like all the rest of the firms here went into the business when their only capital was their hands, their sterling integrity and determination to succeed. But on that foundation they have built a most extensive business and turn out over 100,000 feet of rough granite yearly for monumental purposes, besides a very large amount for building and other purposes. Here one will see also the latest and most improved machinery that has



WORKING A GIGANTIC BLOCK AT THE QUARRY OF E. L. SMITH & CO., BARRE, VT.

ever been devised for the safe and quick handling of the massive blocks that are handled every day.

Their drills are all worked by compressed air, which has taken the place of steam, and which in this climate at least gives a far better service all the year round than steam. In the winter seasons, especially where we have to contend with exceptionally cold weather here, the compressed air shows up to good advantage when compared with steam. This was the first office we visited. We had the pleasure of meeting the proprietors of this company, Mr. John E. Smith and Donald Smith, better known in Barre as Dan. This company was very busy with orders in monumental and block granite work, but they propose in the future to go into building stone lines as well. Their excellent equipment will make it possible for them to do so, and the quality of the granite, which can be cut into any size stone without a break or a blemish. They are now furnishing several large orders for the West, one being the Iowa battlefield monuments. We also saw a large

firm of Barclay Bros., and one of the pioneers in the business. He has the distinction of having the largest granite shed in the world. In addition to the operating, cutting and selling business, he is manager of the Barre Granite Co., who get out dark granite, the Nearside Granite Co., medium granite, the Standard Granite Co., light stone, operating three quarries and selling each trade rough as well as finished stone. Mr. Barclay employs something like 100 stonecutters and probably 100 other men in his quarry. His shed—the largest in the world, 'tis said—is 427 feet long and 64 feet wide. They have two 60-ton Lane Manufacturing Co.'s traveling cranes, two McCoy dressers, four hand tools, one gang saw, which will cut stone 15x8x7, four lathes, four polishers, double pendulum, blacksmith shop with eight fires. The power is furnished by one 85 h. p. Erie engine, one boiler of 125 h. p., besides two air compressors manufactured by the Hall Steam Pump Co. They operate another shed, which has a 270 h. p. boiler and furnishes air with one 150 h. p. and two steam air compressors.

Mr. Barclay is favored in having two active young men, his sons, who add their energy to the business.

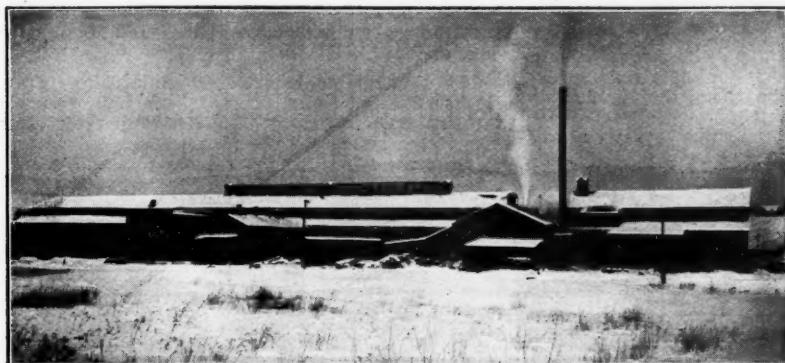
While wending our way toward Montpelier and Barre we had the pleasure of traveling with some of the members of the legislative bodies. Among them were bankers, farmers, merchants, lumbermen and granite producers. In the smoking department of a parlor car people always warm up to each other, and the

conversation of two young men who were born and raised in the Green Mountain State may interest you.

One of them who recently incorporated the Fletcher Granite Co., at Woodbury, and purchased the interest of their former partners, Mr. Fletcher, was about to start the plant. Mr. Fletcher stated to a banker friend of ours that the Vermont people were just beginning to realize what the large granite industry meant to the State, and suggested that if the young men who had money to invest had put it in the Green Mountain hills rather than in the boom towns of the West and South, they would have had a still greater industry, although the substantial men who have had faith in the Vermont mills, and opened up the granite industry are its prosperous members to-day, and it is practically in its infancy.

It is the belief of Mr. Fletcher as well as a number of others, that in the future the granite business will be as large a factor in the building trade as it is in monuments to-day.

One of the pleasures of our trip to Vermont was visiting General Manager C. P. Pitkin, of the Lane Manufacturing Co., of Montpelier. This company was doing an increased trade with the quarries in the East with their excellent traveling cranes, as well as their stone handling machinery. Mr. Pitkin is one of those courteous gentlemen, who, whether he has orders for you or not, knows how to treat you, and that's the kind of people we like to see get orders by the carload without an effort on their part.



THE LARGEST STONE CUTTING SHED IN THE WORLD.
BARCLAY BROS., BARRE, VT.

monument being prepared for the Lemp family, of St. Louis, and it will take a year's profits in the brewery to pay for same.

VISITING HERE AND THERE.

Fortunately for us John E. Smith believes that all work and no play makes the newspaper man rather dull, so after the cares of business were over, we were wrapped in one of Mr. Smith's overcoats and taken out to view the farm scenes at Smith Bros.' stock raising and feed farm. As they employ a large number of horses in their stone operations, they find this farm a very interesting adjunct to their business. Both brothers enjoy a high-bred horse, and in their stables you will find several trotters with records, and in their pastures colts with racehorse blood in their veins. They have blooded cattle and hogs as well, and their particular brand of potatoes are very good. Not being much of a farmer since our childhood, we were very much surprised to see them making chopped feed out of cornstalks and to see them binding with binder and reaper as they do with wheat. After leaving our order for our next spring's supply of maple sugar and admiring the potatoes John E. Smith took us to the race-track. You know Barre is a great place for good trotting horses, and we felt ten years younger when we saw some good trots, although Brother Smith wouldn't let us contribute our Kentucky money to the bookmakers, knowing more about trotting races than we did, so we desisted in our appeals to squander coin.

While in the office of C. H. Moore & Co., at Montpelier, an old lumberman friend of ours, Mr. C. H. Gale, who is not connected with that business said: "In '65, when I left the State of Vermont, you could have bought for \$10,000.00 practically all the granite hills in and around Barre. In a few years it was worth millions, and has grown in value from year to year. The beauty of the Vermont granite is that it comes in three colors and you have material for all parts of a beautiful monument."

It was pay day when on our way to Barre from Montpelier we visited with Manager H. J. M. Jones, of Jones Bros., who employ something like 135 men in the sheds and as many more in their quarries, doing a business close on to a half million dollars in granite. This is one of the progressive concerns in the granite industry, with general offices at Boston.

THE LARGEST GRANITE SHED IN THE WORLD.

One of the esteemed characters in the granite business at Barre is William Barclay, who is of the

LAWMAKERS TAKE IN THE GRANITE FIELD.

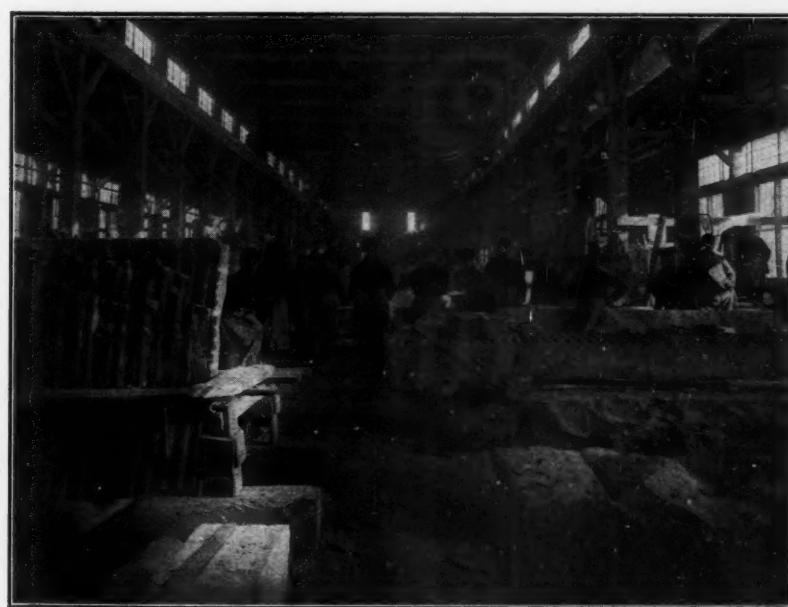
Through the courtesy of Senator Phelps, seventy-five legislators with their wives and friends recently spent an afternoon in visiting the best points of interest in the Barre granite industry. The first stop made by the special train was at Jones Bros.' plant, where fifteen minutes were spent investigating the cutting and polishing of rock. The trip to Millstone Hill was begun, but owing to lack of time only four plants were visited. They were E. L. Smith & Co., Milne; Clarendon & Gray, Boutwells, and Wetmore Morse. The party included the Speaker of the House and President Stanton. Owing to the special care of Mayor Boutwell, of Montpelier, and Mayor Melcher, of Barre, they had a very enjoyable time. Senator Phelps was formerly Mayor of Barre, and it gave him great pleasure to show his friends the beauties of the granite district. With so able a guide the trip could not be other than enjoyable.

There seems to be a difference of opinion between the wholesalers of granite as to the desirability of upholding the hands of the Barre Exchange, evidently due to the fact that in days gone by they have had quite a snap by buying from some of the granite producers who have not included all their fixed expenses in the cost of getting out granite. Rock PRODUCTS can not see why the wholesaler should object to this proposition, because the staple minimum price on any product is much better for the trade at large, and in addition, the contention has always been and we believe it a fair one, that as soon as granite or any other product is sold at a reasonably even price, the middleman, whether he be the wholesaler or the retailer, has no cause to complain, because he should get his profit from the consumer rather than the producer. We believe that if this idea is carried out we would all be better paid. It is only reasonable that an industry like the granite producers' should have a fair price for their product. That is something which before the life of the association was only confined to the few.

A Stone-Cutter for Congress.

St. Louis, Mo., has a stone cutter candidate for Congress in Mr. John T. Hunt, 1419 North Jackson Avenue. Mr. Hunt was nominated on the Democratic ticket six years ago and was defeated by Chas. F. Joy, but has recently been nominated again by the same party and to oppose the same man. Reports from St. Louis state that Mr. Hunt feels like he will win out this time, and we have no doubt that the stone cutting fraternity of St. Louis will rally to his support, because he has been a prominent worker in organizing stone workers, being one of the original workers in organizing the stone cutters' union of the United States.

Wallace J. Stierwalt and Charles Grable are building new boats to further the sand and gravel trade at Fremont, Ohio.



INTERIOR VIEW OF LARGEST STONE SHED IN THE WORLD.
BARCLAY BROS., BARRE, VT.

Lime.

The National Lime Organization.

As per call of the editor of ROCK PRODUCTS, there was a preliminary meeting at Cincinnati this week to arrange for a permanent national organization among the lime manufacturers. The representatives present elected William Warner, of Wilmington, Del., temporary chairman, and E. H. Defebaugh, temporary secretary. They adopted a constitution and by-laws, which, after being submitted to a special committee selected by the meeting, will be brought to your attention. The delegates and correspondence from the trade indicate a strong desire for a national organization. The committees are at work and no doubt you will be asked to become a member.

Did you ever use a belt conveyor to put your limestone in the kiln? It's a big success.

Recently we heard a lime man, in trying to sell his plant, make this startling statement: "We have track facilities for twenty cars a day."

How many of you can compete with the man who lives on \$30.00 a month and makes lime at a price commensurate with his fixed expenses?

Chas. W. Goetz Lime and Cement Co. recently lost their sheds by fire at Glen Park, Mo., and are now putting up fireproof concrete sheds, 250x16.

D. S. Irvine, president of the Contractors and Builders Supply Co., Cincinnati, Ohio, reports things very active. They are having some trouble to get fuel to burn lime at their Cedarville kilns.

A. H. Lauman, of the Standard Lime Co., Gibsonburg, Ohio, makes his home at Pittsburgh. He reports their new kilns are giving excellent satisfaction, and he will have something to suggest to the trade after January 1.

F. P. Hunkins, of the Hunkins-Willis Lime and Cement Co., St. Louis, Mo., has been spending some time visiting the lime kilns of the East in order to investigate the new processes, as he proposes to start a new kiln or two at an early date.

Phil. H. Dauerheim, of the Chas. W. Goetz Lime and Cement Co., St. Louis, Mo., accompanied by Chas. Barton, of the Ashgrove Association, Ashgrove, Mo., visited Marion, Toledo and several other points in the East during the past month.

We heard of a kiln the other day of two by four on the outside, bricked up on the inside, and filled in with dust as a filler, grinding out a large quantity of lime each day and paying big dividends. I wonder how many of the big lime men could pay dividends on this proposition.

Experiments as to the fuel proposition in lime burning are going on all over the country. Some excellent results have been obtained by burning coal, but there is lots to be learned on this fuel proposition and systematic effort should be put forth to get at the meat in the cocoanut.

F. Lawson Moores, of the Moores Lime Co., Cincinnati, Ohio, reports that they have six kilns running, but fuel is scarce and they are starting in to use coal. They are having some trouble, however, in getting satisfactory results, but it is their belief that they will be satisfied later on with the outcome.

A number of our friends in the lime business in Pennsylvania gathered at the Montgomery Hotel, Norristown, October 1, and endeavored to work out some points of special interest to the lime trade. Among those present were: Will' am Irvin, Philadelphia; I. Heston Todd, Port Kennedy; A. D. Warner, Philadelphia; Edward F. Kane, Norristown; Walter H. Corson, Plymouth; Alexander McCoy, Bridgeport; W. H. Catenoch, Andrew Blair and Charles Cox, Norristown. Owing to the advanced prices of coal and fuel as well as labor, the price of lime was put a notch higher.

SOMEWHAT PERSONAL.

John Bullock & Sons, Baltimore, Md., have contract to furnish cement for the erection of a warehouse for Griffith & Turner, of which John Cowan is the builder.

A Barcelona (Spain) cement concern are building a large cement plant and propose to make their own barrels. They purchased machinery through Peter Gerlach & Co., Cleveland, Ohio, for full equipment.

Jas. Mackay, one of the best known in the Barre granite line, has been sick for a couple of weeks this past month, but is about again and as much interested as ever in the promotion of better conditions among the granite manufacturers and quarrymen.

We have been honored with an invitation from The Lukenheimer Co., Cincinnati, Ohio, to be present at the opening of their Fairmount works, Beekman, Tremont, Lawnway and Waverley Avenues, Fairmount, Ohio, Saturday evening October 20 from 5 to 8 o'clock.

Whitcomb Bros., of Barre, who have made a specialty of stone machinery for some years, opened a quarry this past summer, and they propose to cater to the building trade almost exclusively, having a good stratum of rock which is particularly desirable for building purposes.

We have received a dainty catalogue from the Chicago Belting Co., 67-69 South Canal Street, Chicago, Ill., which contains, in addition, numerous artistic illustrations showing how belting is made, with appliances for fastening belts, a fund of practical information for belt users.

We have received from the Harrison Supply Co., 32 India Wharf, Boston, Mass., a pamphlet describing their line of granite polisher supplies, which contains a fund of good information concerning the use of chilled steel shot, carborundum, emery, putty powder, etc. We judge that the pamphlet can be had by the asking by users of this class of material.

We are in receipt of a pamphlet and circular from the Weber Gas and Gasoline Engine Co., Kansas City, Mo., which tells about their famous line of engines and the various uses to which they can be put. The pamphlet contains, in addition to an illustrated description about their engines, a number of excellent testimonials from parties who have used them.

We have received from the Abbe Engineering Co., 220 Broadway, New York City, a catalogue of their line of pebble mills and various other machines for pulverizing refractory substances of all kinds, and the line illustrated seems to be a very complete one, covering everything from laboratory requirements to the largest type of machines. It is quite a valuable catalogue and every one interested in rock products should have one.

We are in receipt of the 20th report of the State Geologist published by the University of the State of New York, Albany, N. Y., which contains a fund of good and authentic information in regard to that State, though we have not at this writing had time to examine it thoroughly. The price of the publication is 50 cents, and it is well worth the price to any one interested in the geology of New York.

The Wood Fiber Machinery Co., 924 Adams Street, Sandusky, Ohio, who manufacture automatic machines for making wood fiber, say that wood fiber plaster has come to stay and that the demand for this material is rapidly increasing, and they are not only prepared to furnish machines for this line of work, but will also be glad to furnish those interested with information for the manufacture of a perfect and practical wood fiber plaster.

We have received from the Sackett Wall Board Co., 116 Nassau Street, New York City, a sample block of Sackett's Plaster Boards for walls and ceilings. These plaster boards are made up apparently with a combination of plaster and sheets of paper board into sheets 32 inches by 36 inches in size, and are intended to be nailed direct to studding without the use of laths, and to be finished with plaster. The claims made for this product is that walls and ceilings constructed with these boards are light and durable and can not fall; that it saves weeks of time, as the light finish dries quickly, and that it makes a warmer wall than laths and plaster and is cleaner in application.

Asphalt.

N. F. Thompson & Co., Sheffield, Ala., and Philadelphia parties have purchased lands and will develop asphalt deposits.

Col. J. Sel Miller, Louisville, Ky., contracting agent for the American Standard Asphalt Co., with mines in Logan County, Ky., has secured contract for asphalt street work in Decatur, Ill.

The Ayres Asphalt Co. has bought ground at Gest and Court Streets, Cincinnati, Ohio, for the erection of the new asphalt plant, and it is said that their old plant between Race and Ryan will be abandoned.

The Central Asphalt and Refining Co., Port Neches, Tex., had a meeting at Beaumont, Tex., of the stockholders October 1, and it is reported that one of the actions of the meeting was a decision to move the offices from Beaumont to Port Neches.

Ex-Postmaster Wm. Webster, of Berlin, Conn., has recently returned from a trip to California, where he has been investigating the problem of making asphalt by refining oil. He is reported as being very enthusiastic on the subject, and will likely organize a company to undertake work of this kind.

Capt. J. A. Gano, of the Capital City Oil Co., Austin, Tex., sent a barrel of liquid asphalt to Palestine recently to be exhibited at the East Texas Industrial Carnival, September 16-18. The asphalt was taken from the company's wells at Waters Park on Walnut Creek, where they have several wells, where they are producing quite a large quantity of liquid asphalt.

The plan of the reorganization of the Asphalt Co. of America, mention of which was made some months ago, was declared operative October 2, when consumers representing the majority of interests in both companies met at Philadelphia and scheduled the assets thus far received. The new holding corporation will be controlled by a voting trust, consisting of Rudolph Ellis, William F. Harrity, Henry Tatnall, Alvin W. Krech and George R. Turnbull, the two latter men representing the New York interests; William G. Harrity, representing the National Co.; Mr. Ellis, the American Co., and Mr. Tatnall, the receivers.

The \$31,000,000.00 capital stock will be divided into \$14,000,000.00 preferred stock, 5 per cent. cumulative after two years, and \$17,000,000.00 common stock.

A Cuban Visitor.

St. Louis reports state that Francisco Zardain, a prominent asphalt mine owner of Havana, Cuba, has recently been visiting in that city. Continuing, the report states that Senor Zardain is the owner of twelve asphalt mines, covering five square miles. He also owns six coal mines. All of these are located within twenty-two miles of Havana. The asphalt mines are in one tract and are separated from his other mines by several miles. The mines are all connected, however, by a railway, which also runs to the bay of Mariel. This railway is owned by Senor Zardain, who is said to be worth \$3,000,000.00, and one of the richest business men of the Cuban capital. Three hundred men are employed in his asphalt mines, and they remove about 1,000 tons of asphalt per day when the mines are operating. Just now he has them all at work taking out mineral for shipment to the United States. Most of the asphalt mining is carried on near the surface. Senor Zardain was a captain of Spanish volunteers during the war against the United States. He was here to investigate the asphalt resources of the United States, and will visit the fields in Arkansas before he returns to Cuba.

The Cincinnati Fire Proofing Co. has changed its name to the Pharo Concrete Construction Co. at Cincinnati, Ohio.

Francis, Jones & Co., Atlanta, Ga., has been awarded a contract by the City Commissioner of Washington, D. C., for granite curbing.

Information Bureau

A Few of the Direct Inquiries Made to the

Office of Rock Products During Last Month.

321.—We want Portland cement.
 322.—We are in the market for black roofing slate.
 323.—We want brownstone.
 324.—I want mosaics and onyx.
 325.—I want gray Georgia marble.
 326.—We are in the market for tiling.
 327.—We want information relative to granite turning and polishing.
 328.—I want copper for gutters, etc.
 329.—I want iron window frames with cathedral glass complete, ready to set in building, for a mortuary chapel and vault.
 330.—I want samples of onyx and glazed brick.
 331.—I want information relative to metal ceilings.
 332.—We want to correspond with concerns making brick machines that will separate small stones from clay.
 333.—We are in the market for brick.
 334.—We want cement.
 335.—We are in the market for lime.
 336.—We need brick machinery.
 337.—Where can we get fertilizer mill machinery?
 338.—We are in the market for salt.
 339.—Where can we get the best steel blades for gang saws?
 340.—We want a publication treating of the manufacture and composition of dry wall plaster.
 341.—We want granite.
 342.—We are in the market for monuments.
 343.—We want all kinds of marble and stone.
 344.—I want emery stone.
 345.—I need pumice stone.
 346.—I am in the market for blacksmith tools.
 347.—Where can I get chain blocks?
 348.—I am in need of cable wire.
 349.—We need crowbars.
 350.—I want $\frac{3}{4}$ -in. hand drills for marble.
 351.—I am in the market for forges.
 352.—I need files.
 353.—I want pulleys, shafting, etc.
 354.—Where can we get sledge hammers?
 355.—We want stone-dressing tools.
 356.—We want shot for polishing stone.
 357.—I am in the market for a stone measurer.
 358.—Where can I get tanks?
 359.—I want wire rope.
 360.—We need blowers.
 361.—We want derricks.
 362.—We are in the market for polishing machinery.
 363.—We want quarry machinery.
 364.—I want to buy rock drills.
 365.—We wish to communicate with manufacturers of stone machinery.
 366.—We want the best Portland cement and sand for making cement sidewalks, in car lots, as light-colored sand and cement as possible.
 367.—We are open to accept the sole Canadian agency for standard American builders' supplies of all kinds. We must, however, in each case be granted the sole agencies of Canada, as from past experience we find that it is not at all satisfactory to handle goods and have several others doing the same. We think we can satisfy any American firm desiring to place goods in this country, and that we can make good business for them, as we

have a good knowledge of American lines, both our president and general manager having been in the business in the States.

368.—Where can I buy rock salt in car lots?

369.—We would like catalogues and circulars relative to roofing slate, roofing and building paper, metal and wood lath, window glass, paint and whitening, each of which we expect to put in stock in the spring, if not before.

Pushing American Marble.

We are still full of the subject of pushing American marble, and have been making a study of the field through telescope, personal interviews, and by extended correspondence with those quarrying American marble, in the hope of figuring out ways and means for pushing matters along. We find from this study that individuals in the trade are energetically pushing American marble so far as they are individually concerned, but there is a lack of united effort to push American marble in general. It has always been characteristic of Americans to push things individually, for every energetic American is a host in himself, and has a personal ambition equal to his energy, which stimulates individual effort. We have no quarrel whatever with this characteristic, but are desirous of combining some of the surplus push and energy for the general good of the trade. In other words, we would like to see some united effort toward pushing American marble so that when one does not get trade he will leave an impression that will help some other American marble man to get it instead of having the order go abroad. Among individual efforts locally is the introduction of cave onyx in the interior of a Louisville building. The moving spirit in this enterprise is Mr. Pellethead, of Kalamazoo, Mich., who is developing property near Mammoth Cave, Ky. Some samples of this stone were being worked at the stone works of the Blatz & Krebs Stone Co., in Louisville, during a recent call there, and the polish and figure are so fine that we expect to hear quite a lot of this stone in the near future. But, to return to the subject of pushing American marble in general, we have a number of letters from people interested in marble quarries, particularly in the South and West, which give evidence that the trade is taking an interest in the subject. One of the letters before us reads as follows: "Please put us down somewhere near the top on the list of those who are willing to co-operate in anything that tends to bring about a larger sale of American marbles in America." That is the way we like to hear people talk, too, and if we can get enough people thinking like this, we will soon be able to form definite plans for the work.

Classifications for the World's Fair.

Are you doing any thinking or making any preparation for an exhibit at the World's Fair, St. Louis 1904? The World's Fair management are ready to co-operate with anything that is for the good of the cause and Mr. J. A. Holmes, chief of the Department of Mines and Metallurgy writes us that the World's Fair classifications includes the following, which shows plainly that it is their intention to give adequate scope for the proper exhibitions of rock products of this country. It is their desire to have shown not only the crude materials, but the process of their utilization and the finished product:

Equipment and methods used in quarrying stone.

Mechanical appliances and processes used in cutting, sawing, shaping and polishing of marble, sandstone, granite, slate and other building stones.

Equipment and processes for crushing, separating, washing, drying, etc., of rocks, clays and other mineral substances.

Ornamental and building stones, rough-hewn, sawed or polished. Stones for highway construction and for other miscellaneous purposes; rocks which produce lime and cement; processes of utilization and their products.

Grindstones, whetstones, pumice stone and other mineral abrasives; processes of their manufacture.

Refractory rocks, fire clays, sands, etc.

Slate, equipment for preparing slate; processes and products.

Clays, kaolin, flint, feldspar and other substances used in the manufacture of earthenware, brick, terra cotta, clays, etc.; processes of utilization, with their products.

Gypsum and other non-metallic minerals.

Rock salt and other natural salts.

And other classes including other mineral divisions.

Trade Prospects.

Toledo, Ohio, is to construct sewers.

Harrisburg, Pa., will do some street paving.

Searcy, Ark., will erect an electric light plant and water works.

The Government is spending about \$35,000.00 at Burlington, Iowa, building dams, etc.

The city of Harriman, Tenn., is having plans made for a sanitary sewerage system.

Findlay, Ohio, has passed an ordinance to issue \$1,700.00 in bonds for constructing a sewer.

J. D. Fitzgibbons has a contract to erect the railway hospital at Texarkana, Tex., to cost about \$100,000.00.

Miles & Bradt, of Atlanta, Ga., have been awarded contract to erect post office at Anniston, Ala., to cost \$59,000.00.

Mr. F. W. Ehen, mayor of New Richmond, Wis., will purchase a stone crusher to do considerable street improving.

Tacoma, Wash., proposes to inspect and repair all defective sidewalks, for which \$8,000.00 has been appropriated.

A contract for the post office at Lockport, N. Y., has been let to The E. H. Dennison Co., Syracuse, N. Y., for \$79,555.00.

It is said that Mrs. A. D. Atkinson, Lexington, Va., contemplates erecting a hotel at Richmond, Va., to cost \$250,000.00.

Louisville, Ky., will vote on an appropriation to issue bonds to the extent of over \$3,000,000.00 for street improvements, etc.

James P. McDonald, Knoxville, Tenn., has a contract to erect a railroad in Guatemala which will cost something like \$3,000,000.00.

Newman & Hay, St. Paul, Minn., have contract to erect a new engine, turntable, etc., for the Union Depot Co. at that place, to cost \$10,000.00.

W. Ancker, superintendent of floating equipment of the B. & O. R. R., Baltimore, Ohio, has planned the erection of a pier to cost \$600,000.00.

The Board of Public Works, Nashville, Tenn., will let contract November 6 for the construction of a sewer of which \$73,000.00 has been appropriated.

Proudfoot & Bird, Des Moines, Ia., are furnishing plans for two buildings which the Des Moines College will erect next year to cost \$65,000.00 and \$25,000.00.

George E. McCullough will build a five-story granite, stone and terra cotta building at Terre Haute, Ind., to cost about \$90,000.00. The architects are Crapsey & Lannie, Cincinnati, Ohio.

At a recent meeting the State Capital Commission, St. Paul, Minn., decided to postpone the receiving of bids on the interior granite work until October meeting. This work will amount to about \$250,000.00.

The Fort Worth (Texas) Telephone Co., recently incorporated with a capital stock of \$304,000.00, have appointed Jones & Winter, Monadnock Building, Chicago, Ill., engineers in charge of construction of a telephone system.

The Navy Department, Washington, D. C., has awarded the contract for building the first granite and concrete dry dock at the Charleston, S. C., Navy yard to the New York Continental Jewel Filtration Co. The contract amounts to nearly \$1,000,000.00.

H. L. Jenkinson, of Newark, N. J., has been awarded a contract for the interior marble and tile work of the United States National Bank Building at Paterson, N. J. The general contract for this building, which is now under course of construction, was awarded to John W. Ferguson,

Monuments.

Charles Reynolds has bought out the monument business of J. R. Corwin, of Union City, Mich.

The Trigg Marble and Granite Works, Rockford, Ill., have been adding pneumatic tools to its equipment.

D. W. Marsh and T. F. Ewing are now proprietors of the Ewing Monumental Works, Coldwater, Michigan.

The Anderson Bros. & McKay, Ionia, Mich., it is said, are talking of removing to Saginaw the first of the year.

The Pilgrim Memorial Association, Boston, Mass., has raised funds for a \$50,000.00 monument on Cape Cod.

The Commercial Club of Minneapolis, Minn., is talking of erecting a monument to the late Col. John H. Stevens.

The marble interests of Brownwood, Tex., seems to have been combined under the firm name of Anderson & Guthrie.

The Woman's Relief Co., of Canisteo, N. Y., are taking steps to raise funds for the erection of a soldiers monument.

The Home Association of Amesburg, Mass., is planning to erect a monument to the late John Greenleaf Whittier.

W. Piernie, of Remsen, N. Y., has a contract to erect pillars at the entrance of the Baron Steuben lot near Steuben, N. Y.

Cooper Bros., of Raleigh, N. C., are adding to the equipment of their monument works in the way of pneumatic tools, etc.

The Mierow Marble and Granite Co., 1402 Commerce Street, San Antonio, Tex., has been succeeded by Lucas & McGrath.

The New Haven, Mich., township board will place a \$1,000.00 soldiers monument in the Lathrop Cemetery, Owosso, Mich.

The Street Commissioner, Martin Kelley, of Norwalk, Conn., is raising funds for the erection of a soldiers monument at that place.

Messrs. Pennell Bros., Sheboygan, Wis., have a contract for a large monument to be erected in honor of Senator James E. Holcorne.

C. W. Weeks has moved his marble and granite works from Alma to Belding, Mich., where he has formed a partnership with J. W. Clark.

The Van Amringe Granite Co., Boston, Mass., have a contract for erecting the Guernsey County soldiers monument at Cambridge, Ohio.

C. J. Parry, of the Parry & Heald Co., Davenport, Iowa, has sold out his interest in the monument business to his partner, L. S. Heald.

W. O. Weaver, formerly of Defiance, Ohio, has bought an interest in the monument establishment at La Fayette, Ind., and moved to that place.

Ray Hartman has purchased an interest in the Reynolds Marble Works at Lake City, Iowa, and the firm is now known as Reynolds & Hartman.

The Coughlan Monument Co., Peterborough, Ont., Can., have been adding to their equipment in the way of electric motors, polishing machines, etc.

The Burnett Granite Co. has been incorporated at Burnett, Tex., by Curt Nebrav, Felix Nebrav and Otto Zurkil. The capital stock is \$2,500,000.00.

C. D. Burnham, of the firm of C. D. & H. D. Burnham, Hartford, Conn., has retired from business and his son, H. D. Burnham, will continue the business.

The Thomas Jefferson Memorial Association, of which Admiral George Dewey has been elected president, is planning to erect a memorial to Thomas Jefferson.

The Barnhart Granite Co., of Chillicothe, Ohio, have had several monumental contracts of late,

one of which was a carload shipped for the Frankfort, Ohio, cemetery.

A committee, of which Walter V. Snyder, Dayton, Ohio, is secretary, is at work raising funds to erect a monument to the late D. A. Sinclair, of the Y. M. C. A. of that place.

Charles Gutz, of Schenectady, N. Y., has a contract for placing a granite monument marking the boundaries between this State and Canada from Rouses Point to St. Regis.

McMellen Bros., Schenectady, N. Y., have secured contract for a mausoleum for Welton Stanford to cost about \$10,000.00. It will be of Barre granite, containing six catacombs.

Stewart & Son, of Abeline, Kan., have bought out the marble works of James J. Johnson at Salina, Kan., and it is said that the new owners will add machinery and improve the plant.

P. H. Higgins, the marble cutter of Shamokin, Pa., has recently erected a handsome marble monument in the Polish Cemetery of that place, which, it is said, has been greatly admired by the citizens of that place.

McDonnell & Sons, of Buffalo, N. Y., have a contract from Senator C. W. Fairbanks, of Indianapolis, Ind., to erect a handsome memorial at Springfield. It will be of Quincy granite and is to weigh eighty tons.

It is said that an independent order of Good Templars will erect a monument at Columbia, Mo., over the grave of the late Col. J. J. Hickman, who



THE BURNS MONUMENT.

was the great temperance orator in Great Britain and America, and at one time held the office of Grand Templar of the World.

Thomas Stanton & Co., Dayton, Ohio, are erecting a monument at Springfield, Ohio, which is said to be the second largest private monument in the world. The monument is for the late Hon. John A. Thomas. The total weight is eighty-eight tons, and the material is Barre granite.

The Goebel Monument Building and Executive Committee have authorized James B. McCreary, chairman, and David R. Murray, secretary, to advertise for designs for a monument to be erected in honor of the late Governor Goebel at Frankfort, Ky., to cost not exceeding \$15,000.00. Designs, specifications and proposals must be delivered to the Committee at Frankfort, Ky., at 11 o'clock, November 18, 1902.

The "Old Fog" in the Granite Business.

With natural ability, a fine quarry, and all the opportunity to make the world move peacefully and calmly, a friend of ours still persists in operating with the old-time methods rather than using modern machinery and modern methods; and while, with the exception of a few competitors, who have to suffer from low prices occasionally, there is no harm done by our good friend, yet, he is passing over the opportunity of a lifetime by not applying the best methods in getting out stone, and at the same time it means that he is not attracting to the community in which he lives the building stone trade, when he might do so.

The Burns Monument.

What is said to be the finest piece of granite workmanship ever executed is the monument which the granite men of Barre, Vt., erected in honor of Robert Burns. The cutting and carving was done in the Barclay Bros.' shop, and the best skilled stone workers to be had in Europe were brought over to do the work. The monument stands 22 feet 10 inches in height, and is eight feet square at the base. The statue of Burns represents him as he appeared in early manhood when he was engaged in his greatest work.

On the four sides of the monument are panels, the one on the front representing "The Cotter's Saturday Night." The family are grouped around the kitchen table, listening to the father, who sits in his chair reading from the Bible, which rests on the table, while the mother and children are attentively listening. There are eight in this piece. Beneath is the couplet:

"From scenes like these old Scotia's grandeur springs."

On the back panel is the representation of Burn's cottage, showing its front and front yard, with a wheelbarrow and various agricultural implements scattered around. Beneath is the inscription: "Burn's Cottage."

On the right-hand panel is a representation of "Tam O'Shanter's Ride," where he is crossing the bridge chased by the witches. Underneath is the couplet:

"As spring brought off her master hale,
But left behind her ain grey tale."

On the left-hand panel is a representation of Burns at the plow, illustrating the poem, "To a Mountain Daisy." Burns is represented in a contemplative mood, looking at the daisy in one hand, which he had just plowed up; the other hand is on the handle of the plow, which is in the furrow he was plowing. The two horses, and the dog sitting watching his master, are inspiring to look at, although depicted in cold granite. Underneath is the couplet:

"Wee, modest, crimson-tipped flower,
Thou's met me in an evil hour."

At the top of the die is carved the rose, thistle and blue-bells. There are no bronze tablets about the monument. Every inscription, every illustration in connection with it is of Barre granite.

Wants Dealers to Organize.

One of my friends in the monument business said: "You say, 'Bring the quarrymen and dealers together.' I say, 'Bring the dealers together first, then the quarrymen and dealers.' After that is done, there ought to be more profit in the business. I have taken your paper from the start and think it a good one."

[The suggestion brought out that there is need for more organized effort among the monument dealers is in line with our thought. There is nothing like good local organizations to prevent promiscuous cutting of prices among men who should get a good, round profit owing to working on designs, and the fact that many designs are made which the other fellows get the order for, and a good corps of draftsmen and others are necessary for a first-class establishment as well as experienced cutters. If you are interested in an organization in your particular section or in your State, the editor of *Rock Products* would be glad to make some suggestions to you which may bring about better conditions.]

A New Milwaukee Plant.

The Milwaukee (Wis.) Monument Co. is erecting what is to be the largest granite plant in the West, and one of the largest in the country. The main building is 352 feet long and 64 feet wide, with thirty-ton power traveling crane in the entire length. No expense will be spared in having the equipment the very best and of latest types.

This company recently purchased two more quarries at Granite Heights, Wis. These quarries produce what is known as "Red Wausau" granite. Work is rapidly progressing at Red Granite quarries, in Wausau County. These quarries furnish "Wausau" granite, which is identical with the Montello granite. Two new openings have recently been made, and a boarding house with sixty-five rooms is in course of construction. The plant at Milwaukee is built to meet the Western trade in Eastern granites, and the beautiful Wisconsin granites. Milwaukee is an ideal place for a large plant of this nature, as the lake rates are very low on all Eastern granites, and on the other hand the principal commercial centers are within easy reach and in daily connection with Milwaukee.

Slate.

Structural Slate—A Growing Industry.

In ROCK PRODUCTS for October the process of manufacturing structural slate was explained at some length, but no attempt was made to enumerate the variety of things that are made out of slate aside from roofing and school slates. Now, as supplementary to that matter, we naturally turn to the subject of slate products, and feeling unable to do the subject justice, we have turned to a man in the business who knows a lot more about it than we do, and we append herewith an article from Mr. M. W. Catchings, which was kindly furnished in response to our request:

DRAKE BUILDING, EASTON, P.A.
Francis Publishing Co.—It affords me considerable pleasure to comply with your request to furnish your ROCK PRODUCTS with an article on structural slate and its various usages; yet I fear I would consume too much of your valuable space should I attempt to cover all of the purposes for which slate is used and the details of manufacture.

Two Distinct Branches of the Business.

In the first place I would state that there are two distinct and separate branches of the slate business, one being classified as roofing slate, and the other structural slate. Persons not familiar with this distinction are of the opinion that all slate used in building, whether for roof or for laundry, is termed "structural." This is a com-

mon error which we encounter daily in our vast correspondence.

Roofing slate is made mostly by hand, the blocks being split to proper thickness, and cut to size on small, foot-power machines.

Structural slate is all turned out by machinery. The slabs of slate in their various sizes and shapes when received from the quarry are passed into the mill. Here they are handled the same as would be a piece of forest timber. The ends are trued by means of a saw, and the sides planed down by means of a heavy planing machine. The slabs are then laid upon a rubbing bed which revolves horizontally. This bed or wheel, which is usually from 12 to 20 feet in diameter, made of iron, being constantly furnished with a fresh, thin coat of fine sand, and running water, cuts

Clear slate is that without streaks or flaws, and is mostly preferred on this account, even at a trifle more cost.

Ribbon slate, however, is in every way as desirable for places where not exposed, as it is just as tough and durable as is clear slate. It has a streak or a ribbon running through it from one-half to an inch in width, which is usually darker than the balance of the slab. On this account ribbon slate is less expensive.

Tennessee and other marbles are sold by the cubic foot, while slate is sold by the square foot, and the price varies according to the grade, size, thickness and finish. It is about one-half as expensive as marble.

Slate from the Bangor quarries of Pennsylvania is considered tougher, and consequently superior to Slatington (Pa.) slate. Furthermore, it is not quite as heavy, and is therefore more in demand, as the expense of transportation is less.

A Few Uses of Slate.

I am pleased to furnish you cuts of some of the articles we manufacture, but regret that we have none of the more important ones.

That your readers may gain some more direct idea of what we manufacture in our Bangor mills, would say that the following is a partial list:

Steps, risers, platforms, urinal stalls, blackboards, kitchen sinks, laundry tubs, grave boxes, mausoleum slabs, morgue slabs, billiard table beds, hearths, wainscoting, tile, flooring, window sills, mantels, feed troughs, lavatory slabs, bowling alleys, paving, table tops, counter slabs, operating tables and many others.

I would also state that slate is non-porous and not porous, as most people would imagine. It always remains clean, and for sanitary purposes meets every requirement; in fact, is recommended by health officials everywhere.

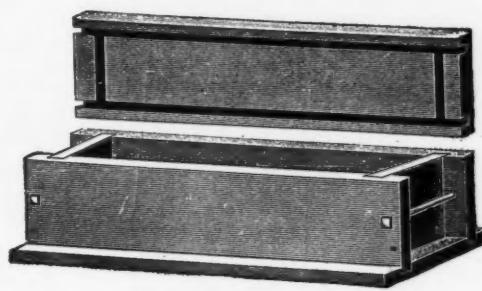
Acids and alkalies do not affect slate, and same does not expand nor contract with temperature.

It is not affected by dampness, and is kept clean with little or no labor.

How Marbleizing is Done.

We marbleize slate in any color when desired, which gives it a finish and appearance equal to that of the most expensive onyx, marble or tile. This is done by baking the coloring on the slate, as in the case of decorated or hand-painted china. The finish thus obtained is lasting, being securely retained on the surface, and is so perfectly performed as to deceive the most critical observer. Marbleized slate is little more than half as expensive as genuine onyx or marble.

While my company is doing enough business to keep five mills going constantly, the structural slate business is in its infancy, and I can see from letters and inquiries which we are receiving from



SLATE BURIAL VAULT.

the slab down to a smooth and even surface. Thus, by sawing, planing and rubbing, the slate is worked up into any size and thickness desired.

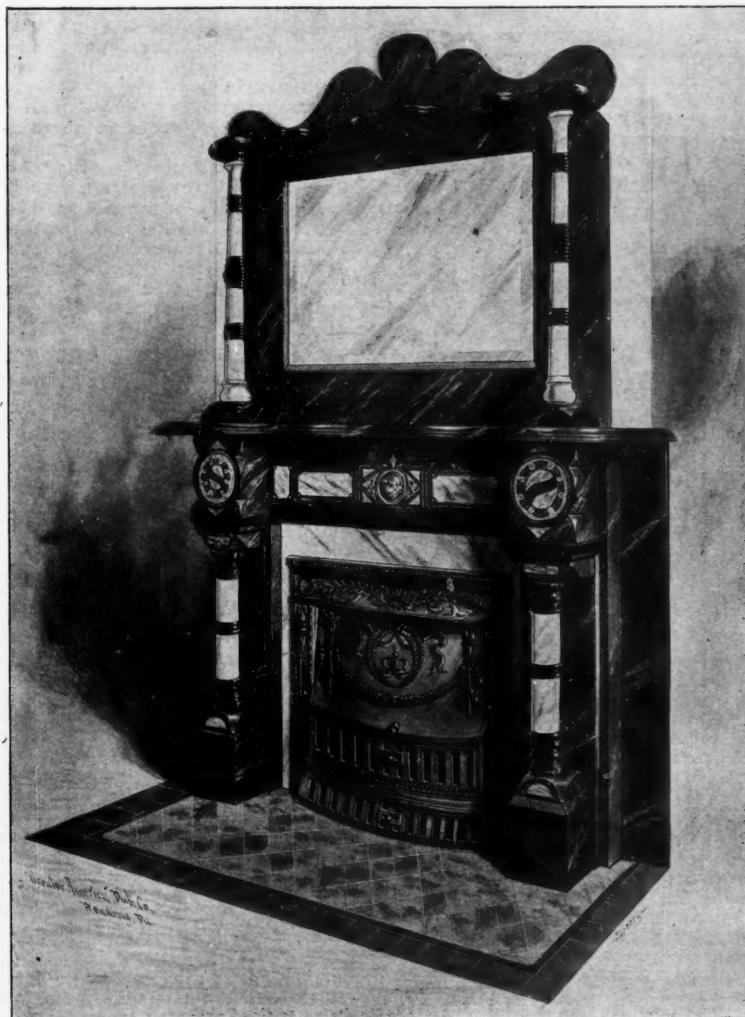
There is also machinery for grooving, boring holes, beveling, rabbeting and circular saw work.

Thus it may be seen that many things made of wood, and all things made of stone and marble, can be made of slate.

The articles we manufacture are very numerous, and it is astonishing how much more slate is being used for structural purposes now as compared with a few years back.

The fact that slate is so much less expensive than marble, stone composition or iron, and is so much more durable than wood, has caused builders, contractors and architects give it the preference.

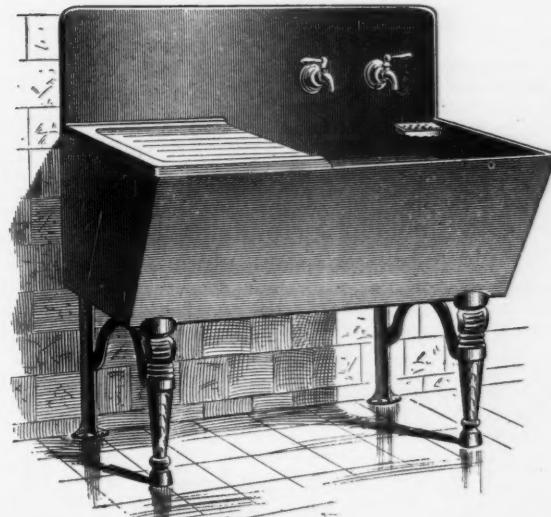
Slate comes from the quarry in two grades: clear stock and ribbon stock.



SLATE IS GREAT FOR MANTELS AND FIRE BOARDS.



SLATE MORGUE SLAB.



KITCHEN SINKS AND LAUNDRY TUBS OF ALL KINDS CAN BE MADE OF SLATE.

all points, as also the increased demand for this material, that it is destined to become a very large industry.

I am pleased to note that such responsible journals as *ROCK PRODUCTS*, *Construction News*, *American Contractor*, *Metal Worker*, *Iron Age* and others are giving attention to structural slate, and am sure it will be worth while doing so.

M. W. CATCHINGS, *Treas., PENNA. STRUCTURAL SLATE CO., Inc.*

The Lovell Slate Co., Martinsburg, W. Va., is preparing to develop slate quarry.

W. E. Hough, of Fairmount, W. Va., is organizing a company to develop slate quarries near Fairmount, W. Va.

The National Slate Manufacturing Co. is being incorporated in the Pennsylvania slate district by John Lobb, Bangor, Pa.; Ernst Lomb, Danielsville; Thomas Ditchett, Bangor, and M. A. Lobb and A. C. Young, Pen Argyl, Pa.

The Lynn Slate Mining Co. has been incorporated under the laws of Delaware with a capital stock of \$150,000.00 by John Lobb and Thos. Ditchett, Bangor; Ernest Lobb, Danielsville, and M. A. Lobb and A. C. Young, Pen Argyl.

Reports from Pultney, N. Y., state that three new slate quarries are being opened between that place and Granville, N. Y. Prichard Bros. are opening one on what is known as the Briar Hill property of S. Wyanburg. Wm. Starr and M. A. Carter, of Pultney, will open a quarry on the Goodspead farm in the town of Wells. W. H. Hughes, of Pultney, has purchased the Jesse Graves farm, which is said to be rich in slate deposits and will open up a quarry.

France Wants Superphosphates.

Consul G. H. Jackson, of La Rochelle, France, writes the Department that this fall has witnessed an active inquiry in that country for American superphosphates (fertilizers). He reports that several thousand tons has recently been sold and another party was inquiring for some 15,000 tons at the time of this communication. For the information of those who have phosphate and desire to seek the French market he says that letters may be addressed to the French Consulate giving prices both f. o. b. Tampa, Fla., and c. i. f. La Rochelle.

Florida Phosphate Beds.

It is said that a report on the phosphate deposits of Florida, which is being prepared by G. H. Eldridge, of the United States Geological Survey, brings to light a number of interesting features on the Florida phosphate beds.

A basement rock of Eocene age, at least 1,000 feet in thickness, was discovered buried under limestones, marls, clays, and sandstones of later date. The phosphate beds are found to lie in a parallel with the Gulf Coast and from fifteen to twenty miles inland. Here the limestones, and perhaps some of the marls, have been altered to phosphate, and broken down into a mass of boulder-like rocks imbedded in clays and sand. They are locally known as "hard rock," and carry from 80 to 85 per cent. of phosphate of lime.

Another form of occurrence which the phosphate takes is a series of pebbles, probably derived from the hard rock and found in old, dried-out lagoons and along river channels in the form of bars. Their proportion of phosphate amounts to from 62 to 75 per cent.

The report will also include a map which will show in some detail the position and extent of the phosphate beds and other interesting geologic features. The preparation of this map involved unusual difficulties, owing to the heavy mantle of recent sands, which covers areas of great extent.

N. J. Inmann and J. D. Eddington will develop phosphate property at Mountain Junction, Tenn., where they have taken a ten-year lease on lands.

One of the largest deals ever reported in Mt. Pleasant (Tenn.) phosphate lands was made recently when the International Phosphate Co. sold to the Virginia-Carolina Chemical Co. a tract of 700 acres a half-mile South of that town. The price paid is said to be \$450,000.00.

E. H. & J. A. Meadows, whose guano factory at New Berne, N. C., burned some time ago, are rapidly pushing the new plant to completion, which is to be one of the largest plants of the kind in the State, and is expected it will be in operation November 1.

Fertilizers.

A Review of the Phosphate Industry.

The amount of phosphate rock that will be required for the trade in the year 1902 is estimated by the *Charleston News and Courier* to be at least 3,000,000 tons, of which Europe is to use at least 2,000,000 tons which this same paper estimates will be supplied about as follows:

	TONS.
From Russia and Norway.....	60,000
From Belgium.....	300,000
From France.....	500,000
From Africa.....	450,000
From South Carolina.....	80,000
From Tennessee.....	75,000
From Florida.....	525,000
	1,990,000
Consumed in America.....	1,250,000
	3,240,000
Total.....	3,240,000

There seems to be an impression that there are no phosphate lands left in South Carolina except those held by the large phosphate and fertilizer companies. This is erroneous and does us an injustice. There are many good marsh and land deposits, and the best river deposits so far have never been mined. They could be bought at fair prices and if ground would make an excellent superphosphate, being the color of Peruvian guano. These are in reach of small companies, for the State owns them, and they could be mined on royalty. River rock was quoted in Europe on September 3: Coosa River 5% for 55 to 60 per cent. rock, which makes an excellent superphosphate.

South Carolina Rock.

What is commercially known as Carolina rock occurs along the margins of our navigable streams and in the river beds. It is convenient to the main lines of railroads, and can be mined quickly and delivered cheaply alongside steam and sailing vessels for shipment abroad, and can be quickly and cheaply loaded on cars for local consumption. Its grade is uniform, can be handled without skilled labor, grinds readily, takes acid kindly, dries promptly and makes uniform goods.

There has been a reaching out for high grade phosphates by all domestic and foreign manufacturers of fertilizers and superphosphates.

Florida the Important Factor.

Florida is the most important factor in the world's supply of phosphate rock, the grade being so much higher and mined in larger quantities, that now controls foreign markets, shipments being made from Fernandina, Tampa, Punta Gorda, Brunswick, Savannah, Pensacola, Key West, Cedar Keys and Port Englis; all these places feel the benefit of this trade. Large sums have been expended in fitting them up as exporting centers.

The great purity and high grade of the Florida rock, combining all the desired qualities, gets the preference from the world's best customers—England, Germany and France.

The year started with many companies mining. The movement was large and there were purchases made for the years 1902 and 1903. The State had about 100,000 tons stock, most of it under contract to be shipped as fast as vessels could be sent for it. The business attracted the attention of capital and more than one syndicate was willing to pay millions for control of the business of the State, but mining owners placed higher prices than were obtainable.

Florida has lost no territory, except perhaps, Japan and Australia, if in future this area may be supplied from the Christmas Islands. The wants of the world grow apace with the supply, and will not have any large shrinkage in price or diminution in quantity now mined and needed each year, and as phosphorus is now being made from phosphate rock it opens up a new use for the higher grades.

With many millions invested in phosphate mining in this State, no reason exists why there should not be mined 1,000,000 tons annually. No

question of quantity—only a matter of price. There could be mined a million of tons just as well as the three-quarters of a million now mined, finding markets in foreign countries. Florida has this advantage—it can supply the soft rock, hard rock, river pebble and land pebble, all of good, uniform quality, with an analysis ranging from 60 to 85 per cent. bone phosphate of lime. It is a settled, conservative business, without any speculative feature to make money out of mining rock, to supply as much of the 3,000,000 tons needed annually by the world, to enable 6,000,000 tons of fertilizers used every year to be made, and the Northern and Southern States using more fertilizers each year, and 27,878,330 acres planted in cotton in 1901-2 should make a crop of 10,750,000 bales.

The Florida rock miners have combined to maintain prices and the outsiders show no disposition to reduce them. Lands and mines are firmly held by Southern and Northern capitalists, who favor sustaining existing prices—\$7.00 to \$7.25, free on board vessel. They would reduce the amount mined first. There is no scarcity of rock nor lack of purchasers, nor land nor mines. Applications are just as numerous as at any other time. It is the finest deposit known—that is the world's decision after twelve years' mining. Many are anxious to control it. The greatest need of the trade is a good supply of reliable labor.

Tennessee Phosphates.

The State has a good deposit of high grade rock, and it has taken an important place in the markets of the world. The condition of the main companies about Mount Pleasant makes a very strong syndicate.

It is always pleasant to see any section of this grand old country or any of its people doing well. We trust the citizen who is laying claim for Nashville as the greatest fertilizer center of the world will not be disappointed, but get to be the largest phosphate producer first; then the other may follow.

Fertilizer Movement From Charleston, S. C. in 1901-9031

There are not so many independent companies interested in this active and important industry in Charleston as heretofore; the combined output being the largest of any city in the United States. All but five of the companies (the Ashepoo, Etowah, McMurphy and Reed Company, Combahee) are owned by the Virginia-Carolina Chemical Co. The others have been syndicated. This wide-awake, enterprising syndicate has subordinated nearly all of the companies in the Southern States, with the exception of about twenty. The American Agricultural and Chemical Co., the Northern syndicate, seems to have fewer rivals. The latest purchase of the Virginia-Carolina Chemical Co. shows plainly that they have money yet to spend to equip themselves and to carry on both mining rock and manufacturing commercial fertilizers, for they now own the most important phosphate mines, as well as the largest fertilizer factories and Southern oil mills.

S. S. Lord, of Mt. Pleasant, Tenn., will develop phosphate property near Pulaski, Tenn.

The Read Phosphate Co., Mt. Pleasant, Tenn., contemplates erecting a fertilizer plant at Chattanooga, Tenn.

It is reported that Armour & Co., of Chicago, Ill., are figuring on establishing a fertilizer factory at Americus, Ga.

The Southern States Phosphate and Fertilizer Co., Savannah, Ga., is making some extensions on some additions to its plant.

The fertilizer plant of Charles Lacker & Co., on the border of Lancaster and Northumberland Counties was partly destroyed by fire October 10.

The Virginia-Carolina Chemical Co., Richmond, Va., has purchased land at Lynchburg, Va., and contemplates erecting a fertilizer plant at that place.

It is reported that The Read Phosphate Co., which operates plants at Charleston, S. C., and at Nashville, will erect a branch plant at Chattanooga, Tenn., to cost \$150,000.00.

The Bates Chemical Co. (Ltd.) has been incorporated with capital stock of about \$20,000.00 at the Works, Toton Nottingham, Eng., to manufacture chemicals, fertilizers, etc.

The Mount Pleasant Phosphate Co., Mt. Pleasant, Tenn., has filed articles of incorporation with a capital stock of \$75,000.00. The incorporators are: J. A. Chapman, S. R. Sanford, J. E. Harris, Thomas I. Weaver and L. R. Campbell.

Clay.

The Manufacture of Paving Brick.

One of the first essentials of paving material is the property of resisting wear from regular street traffic to such an extent as to make it tough enough to justify its use. Therefore, when we consider brick as a paving material, this distinctive quality which is not called for in any other work must be kept prominently in view. Of course due attention must be given to crushing strength, but that property of brick must also be considered in the manufacture of building brick.

The manufacture of brick to resist the wear of street traffic makes it necessary to select raw material with this object in view, and then when the burning process is reached it is carried to the point of vitrification for the same purpose. It is in order to explain right here, however, that burning clay to a point of vitrification did not originate with the manufacturer of paving brick. In fact, the knowledge which has made possible the suc-

Leading authorities give a composition for paving brick clays as follows:

	Minimum Per cent.	Maximum Per cent.	Average
Moisture.....	0.5	3.0	1.5
Silica.....	49.0	75.0	56.0
Alumina.....	11.0	25.0	22.5
Ferric Oxide.....	2.0	9.0	6.7
Lime.....	0.2	3.5	1.2
Magnesia.....	0.1	3.0	1.4
Alkalies.....	1.0	5.5	3.7
Water (loss on ignition)...	3.0	13.0	7.0
Total fluxes.....			13.0

With the proper material secured, either in the original state or by mixing different clays, the first step for consideration is that of mixing clay and forming bricks. The method of preparing clay for manufacturing paving brick is along the same lines of preparing clay for sewer pipe and other vitrified wear. The process usually followed is that of dry grinding by what is known as the dry-pan process, after which the clay is tempered over in the wet-pan or the pug-mill. Brick for paving is made almost exclusively by the stiff-mud process and are often repressed on a second machine built expressly for such work.

Then comes the burning process, which must be carried on slowly and carefully. It usually takes from seven to ten days to burn a kiln and then it must be cooled down slowly to prevent cracking. It is said that on ordinary down-draft kilns, burners who know their business can turn out from 80 to 85 per cent. of good paving brick, but they must know their business, for the careful burning of brick is one of the essentials in the process of burning paving brick. Of course, as a prelude to the actual burning process brick must be dried, and the modern idea is to dry it in a kiln, of which there are three general classes. One furnishes heat direct with coke or coal, another through radiation from steam pipes and another class use what might be termed the hot-air process.

A Modern Type of Brick Dry Kilns.

What is known as the National Natural Draught Steam Brick and Tile Dryer, made by The Na-

masonry to make a place for them. In operating the kiln the air is admitted to the drier through a slatted floor, with dampers at discharging end (see cut of building). Before reaching the drier proper, it comes in contact with the drain headers, drain tank and expansion pipes (which, in other driers, are placed in pits outside of building and the radiation is lost). Thus the heat that is wasted in other driers is utilized in the National to warm the air before it reaches the heating surfaces. A discharge flue is located at the receiving end, constructed of proper area and height; sliding dampers lead into the discharge flue. Thus with the circulation under perfect control, the required density of humidity—which is determined by the nature of the clay—is obtained.

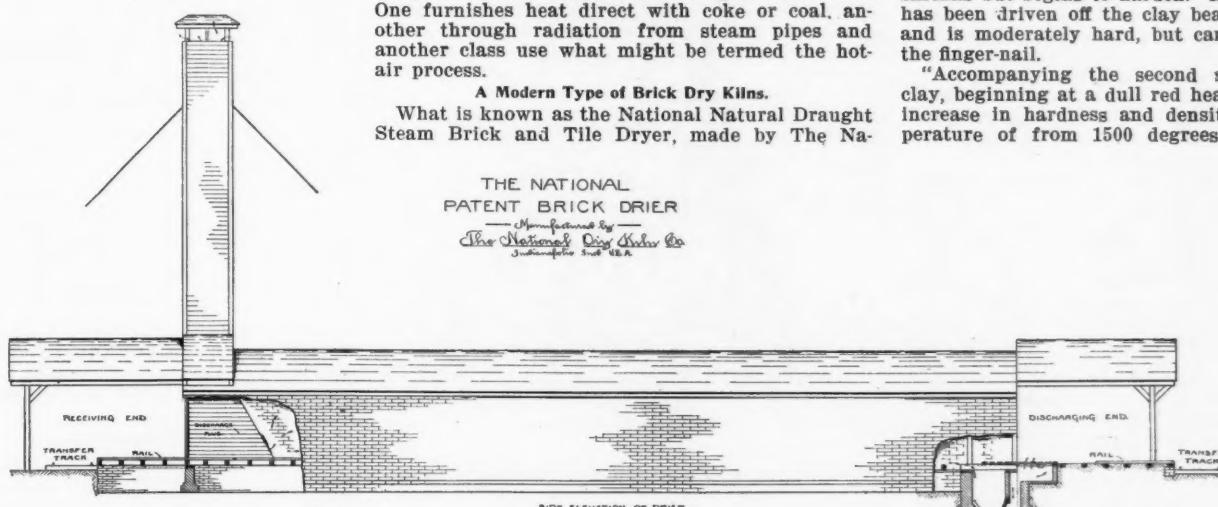
Loaded cars enter the drier and the product is treated to a tempering process, to prevent checking and cracking and preparing it for the high and dry heat into which it gradually passes when the drying is finished.

How the Burning Is Done.

The burning of paving brick is almost universally done with down-draft kilns, which may be of either circular or rectangular type. The circular kiln, which seems to be the least expensive but of small capacity, is probably used more generally in Ohio than anywhere else. The circular down-draft kiln has a capacity of about 25,000, while the rectangular kiln has a capacity ranging from 150,000 to 200,000. In burning clay the study of its fusible qualities is one of the first essentials to thorough knowledge, therefore information on that subject is in order and we quote the following extract from Hienrich Ries in the Geological report of North Carolina:

"In the heating of clay, or subjecting it to a gradually increasing temperature, it not only shrinks but begins to harden. After the moisture has been driven off the clay bears some handling and is moderately hard, but can be scratched by the finger-nail.

"Accompanying the second shrinkage of the clay, beginning at a dull red heat, there comes an increase in hardness and density, and at a temperature of from 1500 degrees to 2100 degrees



SIDE ELEVATION OF DRIER.

SIDE VIEW OF A MODERN BRICK DRY KILN.

cessful production of vitrified paving brick comes from long experience in the manufacture of vitrified sewer pipes. To produce what is called vitrified brick, clay is burned to a point between incipient fusion and viscosity, that point where certain properties of the clay melt and run together, closing up the pores—forming a hard, glassy-like substance. The test usually given for vitrification is the ability of the vitrified body to absorb water. In making these tests glass is taken as a standard, as glass will not absorb water at all, while ordinary claywares absorb water freely.

The Raw Material for Paving Brick.

From this it will be readily understood that the perfectly vitrified brick would absolutely refuse to absorb water, and the degree of perfection is in inverse ratio to the amount of water it will absorb. The appearance of the vitrified brick which enables us to distinguish it with the eye is mainly in itself smooth surface and the absence to the eye of any pores. There may be cracks and fractures, but the surface is generally smooth and even where fractured shows no pores. The first point of consideration in any project to manufacture paving brick is the raw material. Shales are most generally used in the manufacture of paving brick, but their manufacture is by no means confined to this, for various clays are also used. Whatever material is used must have sufficient fluxing impurities to produce vitrification or a dense impervious body at a moderate temperature.

National Dry Kiln Co., Indianapolis, Ind., represents some modern ideas in brick drying, and as it is modern ideas we are after a short description of the kiln and its operations will not be out of place. By reference to the cut you get an idea of the general construction of the kiln, which may be either wood or brick, but brick is recommended, for then there is no danger of fire whatever. The kilns can be operated by exhaust steam during the day and live steam at night. The kiln as ordinarily planned is 116 feet long, but can be made of any special size to suit local requirements, of course. Steel rails, spiked to cross ties and given a slight incline to facilitate the moving of loaded cars, are laid through the drier. The number and length of these tracks govern the holding capacity of the drier. The tracks extend ordinarily ten feet on platforms at receiving end and twenty-five feet on platforms at discharging end. On the tracks 116 feet long there can be placed sixteen cars with holding capacity of from 430 to 606 brick, governed by the kind of brick and style of car. One or two days, of twenty-four hours' continuous operation, is required to dry the average brick, depending on the nature of the clay and kind of machine used.

The steam pipes are arranged directly under the cars and above the cross ties so that very little heat energy has an opportunity to be wasted. In this respect, the equipment of the kiln seems to be very simple and inexpensive, because there are no coil heaters or heaters in pits or strung clear underneath to call for special excavation and

Fahrenheit, depending on the clay, it becomes very dense, the individual particles are barely recognizable, and the clay can not be scratched with a knife. It is still porous, however. This is the point of incipient fusion. With an increase in the temperature of from 50 degrees to 200 degrees Fahrenheit, depending on the clay, an additional amount of shrinkage occurs. The clay becomes hard, dense, impervious, the particles are no longer recognizable, and the maximum shrinkage has been attained. This is the point of vitrification or sintering. With a further similar rise in temperature the clay becomes viscous or flows.

These three stages are not sharply marked, but with a little practice the eye can detect the condition which the burned clay has reached. With few exceptions, the point of vitrification seems to be midway between incipient fusion and viscosity. The difference in temperature between these two points varies from 75 degrees to 100 degrees Fahrenheit, in calcerous clays, up to 400 degrees or more in purer ones. Indeed, the majority of clays show a difference of 300 degrees to 400 degrees Fahrenheit between incipient fusion and viscosity. There are several ways of determining the temperature to get at a knowledge of what you are doing, but that most commonly used is Segers pyramids, which are small fusible cones made up of compounds that fuse at certain temperatures, and numbered as a guide to identity. These cones are set in the kiln at a point where they can be watched through a peep-hole, but at the same time will receive the direct touch of the

flame from the fuel, but usually there are several cones of different fusing points used to serve as a warning when the desired temperature is being approached."

Clay Industries Developing in Oklahoma

University of Oklahoma, Norman, Okla.

The rocks of Oklahoma are chiefly red clays, shales and sandstones, forming what are known as the red beds; with the exception of some relatively small areas in the Eastern part of the territory and in the region of the Wichita mountains in the Southwest, all the base rock is of this character. In the Western part and also along the North slopes of many of the rivers and on some of the level uplands, this red rock is covered with a layer of sand, gravel and clay, known as the Tertiary formation. The sandstones of the red beds are usually soft and not particularly good for building purposes. The color of all the rock is due to the presence of iron. In places the iron constitutes 10 to 20 per cent. of the rocks. It is generally in the form of iron oxide, and by the natives is known by the term "keel." While the material making up the red beds is somewhat varied, the greater part is a rather soft-brick red, clay shale. In many cases there is a practical absence of arenaceous matter. Not infrequently the red clay is mottled with white or bluish dots and spots as large as pea or larger. Sometimes these dots become more prominent and form bands and layers of bluish shale among the red.

This red clay makes excellent pressed brick. There are perhaps not to exceed half a dozen cities of any size in Oklahoma, near which suitable clay for brick could not be obtained. A number of plants are already in operation. At Oklahoma City, Chandler, El Reno, Geary and other cities, plants are turning out from 5,000 to 20,000 bricks each a day. Usually this supply is all used for the local trade so that in many cities brick must be shipped in from Kansas or other adjoining States.

The amount of building being done at the present time is immense. Throughout the greater part of the territory there is a little or no stone suitable for permanent buildings. For this reason brick is largely used.

The chief item of expense in the manufacture of brick in Oklahoma is fuel. Wood is scarce and coal must be hauled from the Indian Territory mines. Notwithstanding this fact, however, the making of pressed brick is already one of the most profitable manufacturing industries in Oklahoma. As the country continues to develop the number of brick used each year can but increase. The amount of clay is inexhaustible, and the fuel item will ultimately be satisfactorily adjusted. For these reasons the manufacture of pressed brick in Oklahoma bids fair to at least keep pace with kindred industries, viz., the manufacture of salt, cement, plaster, etc.

All these industries are still in their infancy, but on account of the immense amount of raw material in the territory they can but become industries of much economic importance.

CHAS. NEWTON GOULD.

Mining Clay With Water.

A recent newspaper description of the brick works of the Western Brick Co., at Danville, Ill., contains the following:

The company is nothing if not progressive, and as an instance of this two innovations in the methods of brick making that are being instituted may be cited. The first is the adoption of a system of shale stripping by hydraulic power and the second is the utilization of the heat from the cooling kilns in the new dry kiln.

Up to the present time the shale stripping has been done by two large steam shovels, entailing a large force of men and a heavy expense in operating them. F. W. Butterworth, the general manager, conceived the plan of using hydraulic water power to do this work and after making some investigation it was decided that the scheme was feasible. A large pump that had given way to a still larger one in the waterworks plant of the city of Marion, Ind., was purchased and installed on the bank of the river south of the factory. A 10-in. main was laid up to the factory and after a great amount of work and the overcoming of many unforeseen obstacles the plant is practically ready for operation.

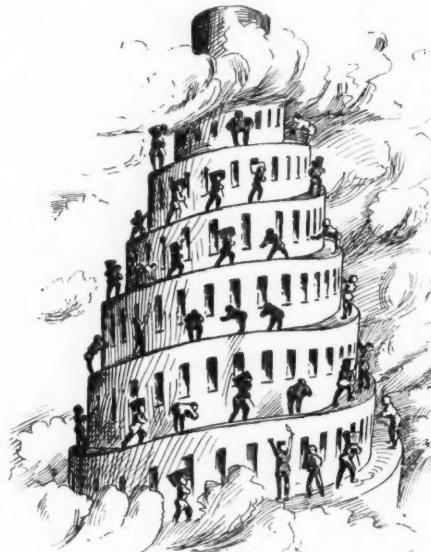
The plan works exactly on the principle of hydraulic mining, which is done extensively in the West. The big pump is sufficient to give a pressure of 100 pounds at the nozzle of the pipe, and this water tears away the soil that covers the shale to a depth of from six to twelve feet.

reduces it to slime and washes it down on the bottoms close to the river. The expense of stripping the shale by this method is a great deal less than the steam shovel method and it is more satisfactory in every respect.

The utilization in the drying kiln of the heat from the cooling kilns also has the merits of originality and economy. The heat stored up in the kilns that are being burned is terrific, the temperature rising to 3,000 degrees. Heretofore this heat has all been wasted, as the kilns stood cooling for several days after the burning had been completed, but by putting in a big system of tunnels under the kilns and the new drying kiln, and installing a number of big fans in the tunnels this enormous supply of heat energy is all conserved and drawn under the drying brick which are undergoing the first process preparatory to burning. The result is a great saving in the matter of fuel.

The Tower of Babel.

The brick situation in the territory tributary to New York City has been in peculiar shape all summer, for notwithstanding the fact that there has been a great demand for building brick, prices have been abnormally low. In fact, the extremely low prices indicate not only that the industry has been overdone in that locality but poor business methods have been employed among the brickmakers, or else they would get together and have a reasonable price for what material they



THE ONLY TIME ON RECORD WHEN THE BRICKMAKING INDUSTRY COULD NOT BE OVERDONE.

do sell. This condition inspired a New York newspaper man to dig into ancient history of brick with the hopes of discovering if there was ever a time when demand for brick existed that could not be overdone in the way of supply. He found one instance, and that was when the children of Noah resolved to obey the injunction "Go to. Let us burn brick, and burn them thoroughly." That was when they started the building of one of the greatest cities the world has ever seen, and to ornament it with a memorial tower to reach unto heaven. There was a market for all the brick they could manufacture, a quick dispatch, and sure and equitable pecuniary returns. The brick business has never since been carried on under conditions so favorable. That is the only time on record when the brickmaker had an absolute cinch and there was positively no danger of overstocking the market. There have been times since that, however, when if the tongues of men may not be confused, men in the brick business fall to thoroughly understand each other, or else there would not be so much cut-throat competition. What the brick-making industry seems to need is more local organization so that a better understanding can be had among local manufacturers and conditions like the past season in New York guarded against.

The Campbells Brick Works, at Sheridan, Pa., is rushed with work, having a number of large contracts on hand. It keeps them rushing.

Samuel F. Wiley, superintendent of the W. F. Fisher Co. brick plant at Sayreville, N. J., has been appointed receiver of that concern, a petition in bankruptcy having been filed recently.

HERE AND THERE IN THE CLAY FIELD.

The Drake Manufacturing and Tile Co., St. Paul, Minn., has been buying additional ground lately.

The West Woods Brick Co. has been organized at Yorkville, Pa., with a capital stock of \$6,000.00.

The Cambridge (Ohio) Brick and Tile Co. are putting in improved machinery for the manufacture of brick.

The Shawmut Clay Manufacturing Co. has been incorporated at New York City with a capital stock of \$200,000.00.

The Marcott-Forbes Cement Brick and Tile Co. has been incorporated at Port Huron, Mich., with a capital stock of \$5,000.00.

The Diamond Brick Co., Barberton, Ohio, will take up the manufacture of silica brick, sewer pipe, hollow ware, etc.

The Iowa Pipe and Tile Co. is erecting a new plant, and expects to be ready to turn out tile some time this winter.

H. L. Frost will open up a brick yard at South Des Moines, Iowa, where he has bought five acres of land and is erecting a plant.

The Indiana Brick Co., whose plant at Alexandria, Ind., was recently destroyed by fire, will move to a new location to rebuild.

The Diamond Brick and Tile Co. has been incorporated at Warren, Ohio, with a capital stock of \$10,000.00, and will erect a plant near Diamond, Ohio.

E. R. Marcotte has bought out the plant of the Port Huron Petrified Brick Co., at Port Huron, Mich., and will organize a company to erect and operate a plant.

Dr. A. E. Harlan, of Alexandria, and C. F. Heritage, of Anderson, Ind., have bought the plant of the Madison Brick Co., at Summitville, Ind., and will improve and operate it.

The brick works of Geo. H. Bruns, between the suburb of Brecon and Maplewood, Cincinnati, Ohio, has been destroyed by fire. The loss is estimated at \$6,000.00, with no insurance.

The Marshalltown Pottery Co., Marshalltown, Iowa, will build a large pottery plant at that place, which, it is said, will be the largest in that State. The manager of the company is Mr. C. M. Matthews.

The National Pottery Co. is beginning the work of erecting a plant at Evansville, Ind., to manufacture sanitary ware. The plant is to cost about \$60,000.00. The president of the company is A. M. Weil.

The York Harbor Brick Co., York, Me., has been incorporated for the purpose of making and selling brick. The officers of the company are: J. C. Webster, president, Hartford; A. H. Locke, treasurer, Portsmouth, N. H.

The Cleveland Brick and Clay Co. has been incorporated at Cleveland, Ohio, with a capital stock of \$100,000.00. The incorporators are: W. W. Nichols, Jerome C. Trask, Francis M. Brady, N. W. Mitchell and D. H. Filden.

The Canton (Ohio) Tile and Hollow Brick Co. seems to have plenty of business at its Waco plant on a contract for paving brick for Cleveland. The plant has a capacity of 30,000 brick a day and 33,000 hollow blocks a week.

J. B. McHoes, Boon, Iowa, has sold his brick and tile plant to McHoes Bros., of Grinnell. The firm will continue to operate the plant at Grinnell and will also put the one at Boon in operation. The latter plant has been idle for some time.

The Granite Brick Co., of Des Moines, Iowa, which was organized by James Watt, cashier of the German Savings Bank at that place and took over the old Newman Bros. brick plant have been awarded a large contract for brick for the Army Post Building.

Edward Shuey, of Toledo, Ohio, has made an assignment to Charles E. Longwell to wind up the affairs of the business of the Shuey Brick Co. The assets and liabilities are about equal so that it would appear that the assignment was simply made to wind up the affairs of the company.

Reports from Wheeling, W. Va., state that the Wheeling Potteries Co. is being organized with a capital stock of \$1,000,000.00, which is in substance the consolidation of the Wheeling Pottery and Riverside Pottery Companies of that city and the Mance Faience Co., of Tiltonville, Ohio.

The Northern Coal and Coke Co. will establish a brick plant at Bentley, Ky.

Charles Richey has purchased the brick and tile plant of McCabe & Son at Rushville, Ill.

The Mascoutah (Iowa) Brick Co. has been adding considerable new machinery lately.

A clay working plant will be established at Harlem, Ga., by C. E. Clark and E. B. Baxter.

G. R. Lynn and Wm. Riggan contemplate establishing a tile factory at Madisonville, Ky.

P. P. Tafal is endeavoring to organize a company at Anniston, Ala., to manufacture sandstone brick.

The Jefferson County Brick Co., Louisville, Ky., has increased its capital stock from \$9,000.00 to \$20,000.00.

It is stated that W. C. Frith and John C. Manton will establish an earthenware plant at Tullahoma, Tennessee.

The J. Milton Blair Brick Co., Cincinnati, Ohio, will be busy all winter, and orders are already in hand for brick.

The American Pressed Brick and Artificial Stone Co., has been incorporated at Pierre, S. D., with a capital stock of \$9,000.00.

Mr. C. W. Reed, of Muncie, Ind., is looking for a pottery plant, and it is said he may locate at Terra Haute, Ind.

The American Ochre Co. is completing a plant at Cartersville, Ga., which is to have a daily capacity of ten pounds of ochre.

The Blackhorse Paving Brick Co., New Cumberland, W. Va., has added to the equipment of its plant, developing their capacity.

George W. Shaw, of Marquette, Mich., has recently made a sale of nearly 2,000,000 brick, and is naturally full of business at his yard.

The brick yard at Brecon, Ohio, owned and operated by George Bruns, has been destroyed by fire. The loss is estimated at \$6,000.00.

The Latrobe Brick Co., Latrobe, Pa., has increased its capital stock from \$50,000.00 to \$100,000.00, and will increase the capacity of its plant.

C. F. Heritage, of Anderson, Ind., and Dr. E. A. Harlan, of Alexandria, Ind., have purchased the plant of the Madison Brick Co., at Summitville, Ind.

The plant of the Keystone Clay Co., Fogelsville, Pa., was destroyed by fire the latter part of September. Steps were at once taken to rebuild the plant.

Keeling & Ridge, Pittsburg, Pa., contractors, are building a brick plant near Derry Station, Pa., to supply a part of the brick required in their own works.

A company, known as the Molino Mill and Brick Co., has been organized, and is building a plant at Molino, Fla., to manufacture lumber, and will also operate a brick yard.

The Lower Brick Co. is erecting new kilns at its yards at North Riverside, Ia., which, together with the works at Sioux City, Iowa, will give that company a daily capacity of 100,000.

Mr. A. B. Call, treasurer of the Thomaston Main Face and Ornamental Brick Co., has recently placed an order for \$32,000.00 worth of brick machinery of one kind and another.

There is considerable activity reported among the brick yards of Portland, Me. The Melvern-Hamblet Brick Co. has a rush of work on, and others in that vicinity have all they can do.

The Toronto Fire Brick Co. has been incorporated at Toronto, Canada, with a capital stock of \$60,000.00. The incorporators are: Andrew Miscampbell, of Thaddeus; W. H. Leavitt and John Ayling.

The Derry Pottery Co., recently incorporated by Pittsburg parties, is at work building a pottery plant at Derry Station, Pa. The company has a capital stock of \$100,000.00, and owns quite a lot of clay land in that territory.

The American Brick and Clay Manufacturing Co. has been incorporated with main offices at No. 76 Montgomery Street, Jersey City, N. J. Incorporators are: John J. Armstrong, Herbert J. Sanders and Wm. R. Chapin.

The Albion Vitrified Brick Co. has been incorporated at Albion, Ill., to manufacture brick and other clay products with a capital stock of \$40,000.00. The incorporators are: Walter Colyer, J. H. Larsey and A. H. Bowman.

Chas. Rawson is working in the brick plant near the Flint Brick Co. works, North of Des Moines, Iowa, to manufacture tile and paving brick. The plant is to be completed by next summer and will cost something like \$150,000.00.

The General Bauxite Co., of Delaware, has been organized at Perrysmith, Ark., with a capital stock of \$100,000.00. The officers of the company are residents of Wilmington, Del., and W. F. Berger is the local representative at Perrysmith.

The Bradley Brick and Terra Cotta Manufacturing Co. has been incorporated at New Orleans, La., with a capital stock of \$25,000.00. The officers are: Sam'l T. Bradley, president; W. W. Van Meter, vice president, and Leon A. Atenhoffer, secretary.

The San Augustine Brick Co. has been incorporated at San Augustine, Tex., with a capital stock of \$10,000.00. The incorporators are: J. W. Saunders, Henry Lewis, E. D. Downs, J. C. Anderson, John Thomson, Jr., Lewis Thomas and A. S. Busby.

The Reynoldsville Clay Manufacturing Co. has been incorporated at Reynoldsville, Pa., with a capital stock of \$25,000.00. The incorporators are: A. M. Applegate, C. J. Kerr, Charles Dinger, Rufus Kirk, J. H. Corbett, M. C. Coleman, Walter D. Williams, Reynoldsville.

The Pennsylvania Clay Co. has been incorporated in New Jersey with a capital stock of \$500,000.00 to manufacture bricks, tile, etc. The incorporators are: Walter L. Wier, S. Clow and F. R. Hensell, who give their temporary address as No. 419 Market Street, Camden, N. J.

The Porfirio Diaz Eagle Pass Brick Co. has been organized at Eagle Pass, Tex., with a capital stock of \$100,000.00. The incorporators are: James B. VanWoort, Geo. M. VanHosren, of New York City; Samuel Bryant, of Woodside, N. Y.; William Hilliss, of Eagle Pass, and John K. Berretta, of Laredo.

The Buckhannon Brick and Tile Co. has been incorporated at Buckhannon, W. Va., to manufacture and sell paving brick. Capital stock, \$50,000.00. The incorporators are: W. F. Viehmier, Anna G. Viehmier, L. H. Lindsay and Sue Lindsay, all of Buckhannon, and W. T. Rumble and Mary Rumble, both of Wheeling.

A company has been formed at Clarinda, Ia., known as the Clarinda Mining and Manufacturing Co., with a capital stock of \$100,000.00 to manufacture pressed brick and shale. Among the incorporators are the following citizens of Clarinda, Ia.: T. E. Powers, physician; Val Graff, merchant; J. N. Miller, cashier Page County Bank; S. E. Sperry, hardware dealer, and W. E. Stevens, contractor.

The Standard Brick Co., which was organized some months ago at Crawfordsville, Ind., has begun the erection of a plant north of that city. The company has a capital stock of \$250,000.00, and will erect a plant to turn out from 25,000 to 40,000 bricks a day. The head of the firm is F. L. Warner, of Chicago, Ill., who has moved to Crawfordsville to look after operations.

The Baltimore Brick Co., which is proprietor of practically all the yards at Baltimore, Md., has recently obtained a new charter under the laws of Delaware. The company, which was recently taken out of the hands of receivers, has been operating under a New Jersey charter. To secure economies in administration is the object of this change. Under the charter secured the company has authority to issue \$4,500,000.00 of stock. Its reorganization plan employs \$3,300,000.00 of this, and the balance is held in the treasury for future uses. The new securities to be issued under the plan will be ready about January 1.

The Carey Brick Co. held a clam bake at its new brick plant at Newton Hook, opposite Coxsackie, N. Y., September 27. About 130 people, comprising stockholders and invited guests, left Mechanicville, N. Y., in two special cars to visit the works and enjoyed the clam bake. The plant of this company is nearing completion and it is said it will be the one brick plant between Mechanicville and New York City equipped to manufacture brick both winter and summer. The annual capacity of the plant will be 24,000,000. Mr. Carey, the president of the company, is said to be the man who has introduced the manufacture of brick during the winter months which he did while manager of the Best Brick Co.'s plant at Mechanicville.

Side Talk.

Sight-Feed Graphite Lubricator.

Speaking of graphite and lubrication, the Lukenheimer Co., Cincinnati, Ohio, have a graphite sight-feed lubricator for engines, regarding which they have been receiving some very flattering testimony, and of which they have the following to say:

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"Another valuable feature of graphite is that it fills up the crevices and intertices of the packings, thus the stuffing boxes need not be kept so tight and the friction on the rods and valve stems is lessened. It also increases considerably the durability of the packings.

"While many engineers would use graphite, they have found considerable difficulty in procuring



suitable apparatus for feeding it to the parts to be lubricated.

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"The Lukenheimer patented sight-feed graphite lubricator should always be placed on the steam chest. On slide valve engines it is only necessary to use one cup, placing it about the middle of the steam chest, but on Corliss engines it is best to use two, placing one over each valve.

"In operating the lubricator you close the steam valve B and open drain plug X to allow steam to escape from cup; then close regulating valve A, remove filling plug C, and fill cup with graphite. After replacing filling plug close drain plug, open steam valve (wide) and regulate feed of graphite by regulating valve. The sight feed glass can easily be cleaned by opening drain plug. If necessary to replace the sight-feed glass take cup apart by means of lock-nut E, and slide the new glass down through the opening.

"As graphite is a very superior lubricant, and a small quantity will last quite a while, it is recommended to be used very economically, as a continuous feeding of same is not necessary; thus the feed can occasionally be shut off. To insure best results, we would recommend the use of our superior graphite, which is put up in five-pound cans and is very reasonable in price."

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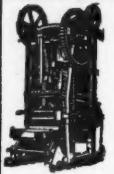
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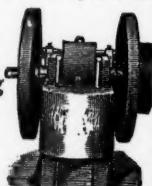


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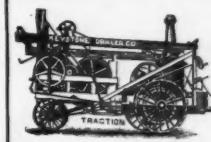
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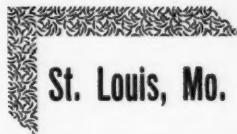


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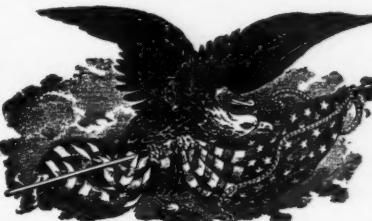
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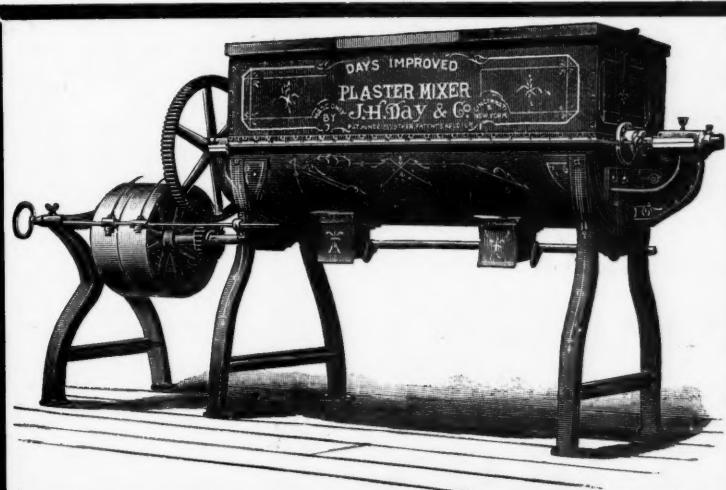


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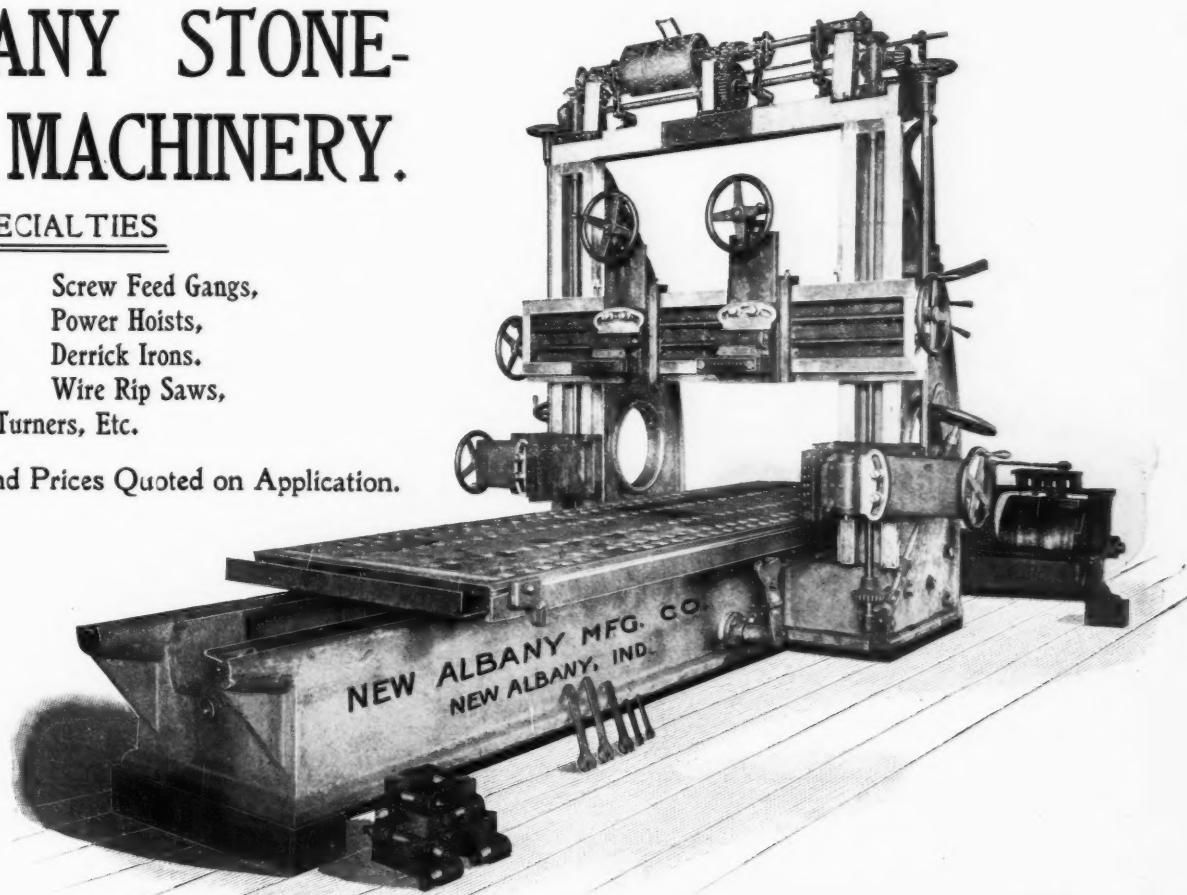
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